This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Stanford University Libraries

The Branner Geological Library

LELAND·STANFORD·JVNIOR·VNIVERSITY

The Branner Geological Library

LELAND·STANFORD·JVNIOR·VNIVERSITY

Bulletin No. 300

Series { A, Economic Geology, 86
B, Descriptive Geology, 105 }

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR

ECONOMIC GEOLOGY

OF

THE AMITY QUADRANGLE

EASTERN WASHINGTON COUNTY
PENNSYLVANIA

BY

FREDERICK G. CLAPP

WASHINGTON
GOVERNMENT PRINTING OFFICE
1907

283333

CONTENTS.

Page.

- Introduction 9
- Commercial geography 9
- Stratigraphy 11
  - General statement 11
  - Surface rocks 11
    - Carboniferous system 11
      - Rocks above the Waynesburg coal (Dunkard group or Permian series) 11
        - The group as a whole 11
          - Definition 11
          - Character and thickness 12
          - Division of the group 12
        - Rocks above the Upper Washington limestone (Greene formation) 12
          - Character 12
          - Distribution 13
        - Rocks between the top of the Upper Washington limestone and the top of the Waynesburg coal (Washington formation) 14
          - Character 14
          - Distribution 15
      - Pennsylvanian series 15
        - Rocks between the top of the Waynesburg coal and the bottom of the Pittsburg coal (Monongahela formation) 15
          - Definition 15
          - Character and thickness 15
          - Distribution 18
  - Rocks which do not outcrop 19
    - General statement 19
      - Sources of knowledge 19
      - Thickness 19
      - Datum horizon 20
    - Carboniferous system 20
      - Pennsylvanian series 20
        - Rocks between the Pittsburg and Upper Freeport coals (Conemaugh formation) 20
          - Definition 20
          - Thickness 20
          - Character 21
        - Rocks between the top of the Upper Freeport coal and the top of the Pottsville sandstone (Allegheny formation.) 23
          - Definition 23
          - Thickness 24
          - Character 24

Stratigraphy—Continued. Page.
  Rocks which do not outcrop—Continued.
    Carboniferous system—Continued.
      Pennsylvanian series—Continued.
        Pottsville sandstone or Salt sand (Pottsville formation) 25
          Definition 25
          Character and thickness 25
      Mississippian series 25
        Rocks between the Pottsville (Salt sand) and Burgoon (Big Injun) sandstones (Mauch Chunk formation) 25
          Definition 25
          Character and thickness 25
          Unconformity 27
          Greenbrier limestone (Big lime) 27
        Rocks between the Greenbrier limestone and the Catskill red beds (Pocono formation) 28
          General statement 28
          Character and thickness 28
          Red shale (Bedford?) 29
    Devonian system 30
        Rocks below the top of the Catskill red beds (Chemung formation) 30
          General character 30
          Catskill (or sub-Blairsville) beds 31
          Sandstones 32
        Beds lower than those penetrated in the Amity quadrangle.. 33
Geologic structure 36
  Method of mapping 36
    Structure contours 36
    Degree of accuracy 37
    Limits of error 37
  Structure in detail 38
    Structure of Pittsburg coal 38
      Bellevernon anticline 38
      Waynesburg (Pigeon Creek) syncline 39
      Amity anticline 40
      Nineveh syncline 41
      Washington anticline 41
    Relation of structure of Pittsburg coal to structure of other beds 42
      Lack of parallelism between beds 42
      Structure of Gantz sand 42
Mineral resources 42
  Petroleum and natural gas 42
    Distribution of oil and gas fields in the Amity quadrangle 42
    Brief history of development in Washington County 44
      Early history 44
      Washington field 45
      Fonner field 47
      Zollarsville field 47
    Oil and gas rocks 47
      Description of the map 47
      Depth of wells 48
      Mode of occurrence of oil and gas 48
      Oil and gas sands 48

Mineral resources—Continued. Page.
  Petroleum and natural gas—Continued.
    Oil and gas rocks—Continued.
      Oil and gas sands—Continued.
        Drillers' names 48
        Murphy sand 49
        Dunkard sand 49
        Gas sand 50
        Salt sand 50
        Big Injun sand 50
        Squaw sand 52
        Thirty-foot sand 52
        Gantz sand 52
        Fifty-foot sand 54
        Gordon Stray sand 55
        Gordon sand 55
        Fourth sand 57
        Fifth sand 57
        Bayard sand 58
        Elizabeth sand 58
        Beds below the Elizabeth sand 59
    Production of oil and gas 59
      Washington oil field 59
      Fonner oil field 61
      Zollarsville gas field 61
      Miscellaneous wells 61
      Pressure of natural gas 62
    Theory of oil and gas 62
      The "anticlinal theory" 62
      Application in Pennsylvania 63
      Relation of oil and gas reservoirs in the Amity quadrangle to geologic structure 63
        Washington field 63
        Examples of the anticlinal tendency of gas 64
        Zollarsville field 64
        Summary 65
      Origin of oil and gas 65
    Miscellaneous notes on oil and gas 65
      Character of the oil 65
      Composition of natural gas 66
      Waste of natural gas 67
      Value of good well records 67
      Records of wells in the Amity quadrangle 68
  Coal 88
    General statement 88
    Pittsburg coal 88
      General statement 88
      Mining operations 89
      Thickness 90
      Quality 95
      Methods of development 98
    Redstone coal 101
      Thickness 101
      Quality 102

Mineral resources—Continued.

Page.
Coal—Continued.
- Sewickley coal 103
  - Thickness and intervals 103
  - Quality 104
- Uniontown coal 104
- Waynesburg coal 105
  - Intervals 105
  - Distribution 106
  - Thickness 107
  - Quality 111
- Waynesburg "A" coal 112
- Waynesburg "B" and Little Washington coals 113
- Washington coal 113
  - Thickness 113
  - Quality 114
- Jollytown coal 115
- Tenmile coal 115
- Local coals 116
- Coals which do not outcrop 116
  - Coals in the Conemaugh formation 116
  - Coals in the Allegheny formation 116

Limestone 118
- Relative abundance 118
- Uses 118
- Limestones between the Pittsburg and Waynesburg coals (Monongahela formation) 119
    - Fishpot limestone 119
    - Benwood limestone 119
    - Waynesburg limestone 121
- Limestones above the Waynesburg coal (in the Dunkard group) 121
  - Local limestones between the Waynesburg and Washington coals 121
  - Limestones above the Washington coal 122
    - Lower Washington limestone 122
    - Middle Washington limestone 123
    - Jollytown limestone 124
    - Upper Washington limestone 124
    - Prosperity limestone 128

Sandstone 128
    - Pittsburg sandstone 128
    - Waynesburg sandstone 128
    - Other sandstones 129

Clay and shale 129
- Clay 129
- Shale 130

Water resources 130
- Surface drainage 130
- Use of creek water 131
- Water supply of Washington 131
- Other town supplies 132
- Supply of the farming communities 133
- Water-bearing horizons 133

Page
Topographic data 134
  Triangulation stations 134
  Meridian marks 138
  Spirit-level data 138
Principal publications bearing on the geology of the Amity quadrangle and vicinity 140
Index 141

ILLUSTRATIONS.

PLATE I. Economic geology map of the Amity quadrangle, with columnar section .... Pocket.
II. Sections of deep wells in the Amity quadrangle and vicinity 22
III. Sketch map showing geologic structure in region adjacent to and including the Amity quadrangle 38
IV. *A*, Gantz well at Washington; *B*, Present appearance of oil operations on the Willetts farm, Washington oil field 44
V. Sections of Pittsburg coal in the Amity quadrangle 92
VI. Sections of the Waynesburg coal in the Amity quadrangle 106
VII. *A*, Waterfall over Benwood limestone, Union Township; *B*, Outcrop of Lower Washington limestone on Smith Run, Amwell Township .. 120
VIII. *A*, Outcrop of Pittsburg coal at base of Pittsburg sandstone in valley of Fishpot Run, East Bethlehem Township; *B*, Bluff of Waynesburg sandstone at Lone Pine on Little Tenmile Creek 128

FIG. 1. Generalized section of beds below the Pittsburg coal 20
2. Map of oil- and gas-producing areas in the northern Appalachians.... 43
3. Map showing the diminution of interval between the Pittsburg coal and the Gantz sand 53
4. Map showing area of the Pittsburg coal bed in Pennsylvania 89
5. Generalized section of Pittsburg coal bed, with names of different benches 92
6. Sections of the Redstone, Sewickley, Waynesburg "A," and Washington coals in the Amity quadrangle 102
7. Location of triangulation stations in and near the Amity quadrangle . 134

ECONOMIC GEOLOGY OF THE AMITY QUADRANGLE, EASTERN WASHINGTON COUNTY, PA.

By Frederick G. Clapp.

INTRODUCTION.

The Amity quadrangle lies in the southwest corner of Pennsylvania, and includes a portion of eastern Washington County and two small areas in northern Greene County. It extends from latitude 40° to 40° 15′ and from longitude 80° to 80° 15′, and comprises an area of 228.4 square miles. It is bounded by the following quadrangles: On the north by Carnegie, on the east by Brownsville, on the south by Waynesburg, and on the west by Claysville. The largest town is Washington, which had in 1900 a population of 14,117.

The principal lines of transportation in the region are the Pittsburg, Cincinnati, Chicago and St. Louis division of the Pennsylvania lines and the Pittsburg and Wheeling branch of the Baltimore and Ohio Railroad, both of which pass through Washington. The Waynesburg and Washington Railroad, a part of the Pennsylvania system, is a narrow-gage line running south from Washington to Waynesburg, in Greene County. Along South Branch of Pigeon Creek a branch of the Pennsylvania Railroad has been built as far as the mines at Three and Four.

The main economic interest in this area lies in the facts that it has been the seat of extensive oil and gas development, and that it is almost entirely underlain by at least one valuable seam of bituminous coal. By reference to fig. 4 (p. 89) it will be seen that the quadrangle is located near the center of the north end of the Pittsburg coal field.

The field work on which this report is based was done by the writer and Frank W. De Wolf in July and August, 1904.

COMMERCIAL GEOGRAPHY.

The surface relief of a region is always important in connection with the development of its mineral resources, and in the Amity quadrangle, especially, it is necessary to know something of the topography in order to plan for future economic operations. The amount of relief or difference in altitude between the highest hilltops and deepest valleys in this quadrangle is moderate, being about 700 feet. A great many creeks and their tributaries dissect the region into hundreds of sharp ridges or knob-like hilltops, with steep slopes extending to the bottoms of ravines which cut up the territory in every direction and make it very rough.

The features of greatest importance in the development of the region are the main valleys. Along them the principal settlements are situated; and they are also generally utilized for through lines of travel, both wagon roads and railroads. For instance, the valley of Chartiers Creek furnishes sites for the towns of Washington and Houston and a direct route for the branch of the Pittsburg, Cincinnati, Chicago and St. Louis Railroad connecting with the city of Pittsburg. The valley of Peters Creek and part of that of Little Chartiers Creek are occupied by the Baltimore and Ohio Railroad for its route between Pittsburg and Wheeling by way of Washington. Tenmile and Little Chartiers creeks and all their larger branches are followed by main wagon roads, and in time they will doubtless be paralleled by railroads. Tenmile Creek affords a specially favorable route for entering the southern part of Washington County by way of Monongahela River.

Of greatest importance are the relations of the topography to the coal industry. The Pittsburg coal bed, which is the most valuable seam in southwestern Pennsylvania, outcrops for several miles along Chartiers and Peters creeks, and here it is possible to mine it by drift and slope with little difficulty, and the small mining settlements of Meadowlands, Anderson, Venetia, and Hackett have sprung up. In portions of the quadrangle where this seam does not outcrop the valleys naturally form the most favorable locations in which to reach it by shafts, and hence operations have been conducted on Pigeon Creek for several years. This creek flows eastward into Monongahela River and forms a convenient route by which a branch of the Pennsylvania Railroad reaches the mines. The valleys of Little Chartiers and Tenmile creeks are suitable for this same purpose.

Within the last twenty years oil and gas have been discovered in paying quantities beneath the Amity quadrangle, and drilling has been conducted on a large scale. In prospecting for oil and gas the valley bottoms are naturally chosen as the first sites for wells, because the expense and time required to drill through several hundred feet of rock in the hills are thereby saved. As development of the field progresses, the position of the oil or gas belt becomes better known, and later wells, being drilled in the most favorable positions for finding the oil without regard to topography, are widely scattered over the hills. Hence, it is apparent that the topography has very little practical effect on the oil and gas industry. The valley of Chartiers Creek, between Meadowlands and Houston, is the site of many large oil tanks, in which oil from the Washington and Greene county fields is stored. Pipe lines, however, follow both valleys and uplands.

STRATIGRAPHY.

GENERAL STATEMENT.

With the exception of a few comparatively recent deposits in the valleys, the rocks exposed at the surface of the quadrangle are all of Carboniferous age. They belong chiefly to the Monongahela, Washington, and Greene formations, but the Conemaugh reaches the surface in two small patches. The formations which do not outcrop, but which are penetrated by deep wells, include, from the top downward, the Conemaugh, Allegheny, Pottsville, Mauch Chunk, and Pocono formations of the Carboniferous system, and part of the Chemung formation of the Devonian system. Below the Chemung lie thousands of feet of buried strata which have never been reached by the drill in this territory. The general relations of the various beds are shown for the formations which outcrop in the columnar section (Pl. I, in pocket), and for those which do not outcrop in fig. 1 (p. 20).

Although the general relations of the beds are fairly constant, there are considerable variations in details in different parts of the area. Sections a number of miles apart, and even those within a short distance of each other, are likely to differ somewhat in the character and thickness of the various beds. This is especially true of the formations which do not outcrop, as reported in well sections. Over widely extended regions, however, uniform conditions prevailed and sedimentation resulted in strata without much variation at the same horizon. Such horizons serve useful purposes in geologic correlation, and are frequently of economic importance. The Pittsburg coal, the Waynesburg sandstone, the Upper Washington limestone, the Salt sand and the Big lime are examples of strata that are persistent over wide areas. The geologic map of the Amity quadrangle is shown in Pl. I., in pocket.

SURFACE ROCKS.

From the highest to the lowest exposed horizon in this quadrangle the vertical thickness of the strata is about 1,200 feet, the highest point stratigraphically being in the hills in Morris Township, Greene County. The rocks are chiefly sandstones, limestones, and shales, but in the Monongahela and Washington formations several valuable coal beds occur.

CARBONIFEROUS SYSTEM.

ROCKS ABOVE THE WAYNESBURG COAL (DUNKARD GROUP OR PERMIAN SERIES).

THE GROUP AS A WHOLE.

Definition.—The Dunkard group, known in a broader geologic sense as the Permian series, includes all rocks from the top of the Waynesburg coal up to the uppermost beds in the Appalachian basin. The rocks were formerly known as the Upper Barren Measures, for the reason that with rare exceptions they do not carry workable coal beds, and they lie higher up in the strata than the Lower Barren Measures.

Character and thickness.—In the Amity quadrangle the greatest thickness of the Dunkard beds is about 750 feet, in Morris Township, Greene County, in the extreme southwest corner of the quadrangle. The beds of this group dip toward the southwest and reach their maximum depth below the surface somewhere in the vicinity of the headwaters of Dunkard Creek, near the boundary between Pennsylvania and West Virginia. In that region some of the hills reach altitudes of over 1,100 feet above the base of the group.

These rocks vary greatly in different regions. In general they consist of shales and shaly sandstones, but a few more or less persistent beds of rather massive sandstone are known, and in the lower portion of the group there are several important limestones. This portion also contains a number of coals, but they are usually of little economic value. In Greene County the Dunkard group carries many beds of red shale. These increase in importance toward the southwest and are most prominent in West Virginia, but toward Washington County they disappear, giving way entirely to the ordinary drab or yellowish shales, traces of which can be seen in some of the highest hills in the southwestern part of the quadrangle.

Division of the group.—The Dunkard group was formerly considered a formation, like the Conemaugh and Monongahela, but in this area the lower portion is much more calcareous than the upper portion, and contains several minor coal beds; it is therefore considered as a distinct formation. The line of division is the top of the Upper Washington limestone, the most persistent and most easily recognizable member of the group. The Dunkard beds above this line are known as the Greene formation and those below as the Washington formation, from the respective counties in which they are typically developed.

ROCKS ABOVE THE UPPER WASHINGTON LIMESTONE (GREENE FORMATION).

Character.—In eastern Washington County no good section of the Greene formation has been measured. In his report on the Greene and Washington district Stevenson[a] gives the following section for Center Township, Greene County, which is of value to show the general nature of the rocks, though there is a wide variation in their intervals and character:

---

[a] Second Geol. Survey Pennsylvania. Rept. K., 1876, p. 35.

Generalized section of the Greene formation in Greene County.[a]

	Ft.	In.
Concealed	80	
Limestone (XIV)	Fragments.	
Shale, reddish	80	
Limestone (XIII)	4	
Sandstone	50	
Limestone (XII)	10	
Sandstone and shale	80	
Limestone (XI)	2	6
Shale, argillaceous	12	
Sandstone	30	
Coal, Nineveh	*1*	*8*
Sandstone	36	
Shale, bituminous	1	
Limestone (X)	2	6
Sandstone, shaly, massive (Fish Creek)	100	
Coal, Dunkard	*1*	*6*
Limestone (IXb)	3	
Sandstone and shale	30	
Limestone (IXa)	6–15	
Shale, sandy	70	
Limestone (VIII)	2–5	
Coal	*1*	*8*
Sandstone	19–30	
Limestone (VII)	2	6
Sandstone	31	
Shale and iron ore	10	
Limestone, Upper Washington (VI)		

In the Amity quadrangle only one coal in this formation, the Tenmile, has been opened at one or two points. Several limestones are distributed through the formation, but the Prosperity limestone, from 100 to 180 feet above the Upper Washington, is the only one which seems to be at all important.

Distribution.—In this quadrangle the rocks of the Greene formation reach a maximum thickness of about 400 feet in Morris Township, Greene County, and are best developed in the southern and western parts of the quadrangle. On the highlands along the boundary of Greene County, south of Tenmile Creek the formation is continuous, having a thickness of 200 to 400 feet, as far east as Bissell. North of Tenmile Creek and west of Bane Creek it is well developed through Morris, South and North Franklin townships nearly to Washington. It forms the greater part of northwestern Amwell and southern South Strabane townships, and in places attains a thickness of over 300 feet. It is well developed as far north as the Baltimore and Ohio Railroad, but beyond appears only in small isolated areas. Throughout West Bethlehem Township it caps many of the higher hills with a local thickness of 100 to 150 feet. Patches of it occur as far north as Odell and nearly to Ellsworth. Several knobs in the vicinity of Denningsville are also capped by it.

---

[a] The numbers in parentheses are designations applied to the various limestones by Stevenson in his report.

ROCKS BETWEEN THE TOP OF THE UPPER WASHINGTON LIMESTONE AND THE TOP OF THE WAYNESBURG COAL (WASHINGTON FORMATION).

Character.—The thickness of the Washington formation varies, but in this quadrangle is generally from 300 to 400 feet. The formation contains several easily traceable members, which have been designated by special names. The following generalized section is given by Stevenson[a] and is believed to be a fair average of the extreme development of the formation in this area:

Generalized section of the Washington formation in Washington County.

	Feet.
Limestone, Upper Washington	30
Sandstone	40
Coal	*1*
Sandstone	40
Limestone, Middle Washington	15
Sandstones and shales	60
Limestone	8
Sandstone and shale	20
Shale, bituminous or coal	1
Limestone, Lower Washington	20
Coal, Washington	*10*
Sandstone, laminated	12
Coal, Little Washington	*1*
Shale	6
Limestone	20
Coal, Waynesburg "B"	*1*
Sandstone	30
Limestone	8
Coal, Waynesburg "A"	*2*
Sandstone, Waynesburg	60

Stevenson[b] also gives a partial section of the Washington formation on Cemetery Hill, in the southern part of Washington, as follows:

Section on Cemetery Hill, Washington.

	Feet.
Limestone, Upper Washington	30
Concealed	50
Coal	*Blossom.*
Imperfectly exposed	80
Limestone, Lower Washington	12
Coal, Washington	*7*
Clay	4
Sandstone	9
Concealed	10
Limestone	2

---

[a] Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 44.

[b] Op. cit., p. 248.

Distribution.—The rocks of this formation cover a larger area in this quadrangle than those of any other. They occupy the surface of nearly all the central portion, the exceptions being patches of the Greene formation which cap the hills along the Waynesburg and Nineveh synclines. The formation also outcrops along the main branches of Tenmile Creek and up its tributary valleys on the north. On the eastern and northern borders of the quadrangle it forms the hilltops and crests of the ridges above the Monongahela formation.

PENNSYLVANIAN SERIES.

ROCKS BETWEEN THE TOP OF THE WAYNESBURG COAL AND THE BOTTOM OF THE PITTSBURG COAL (MONONGAHELA FORMATION).

Definition.—The Monongahela formation extends downward from the top of the Waynesburg coal to the bottom of the Pittsburg coal, and in this quadrangle varies from 280 to 360 feet in thickness. In the reports of the Second Geological Survey of Pennsylvania it is known as the Upper Productive Measures, to distinguish it from a similar productive formation much lower in the series.

Character and thickness.—The formation consists predominantly of limestones, but also contains shales, occasional sandstones, and at least three valuable beds of coal. The best recorded section in Washington County was measured by I. C. White,[a] near West Brownsville, and is as follows:

Section of Monongahela formation near West Brownsville.

	Ft.	in.	Ft.	in.
Coal, Waynesburg:				
Coal		*10*	*3*	*7*
Clay		3		
Coal	*2*	*6*		
Shale and sandstone			45	
Shale, bituminous, Little Waynesburg coal			*1*	*6*
Limestone, Waynesburg			10	
Sandstone, shaly			40	
Coal, Uniontown			*3*	
Shale and sandstone			28	
Limestone, with thin shale			88	
Coal, Sewickley			*Blossom.*	
Sandstone, shaly			32	
Limestone			30	
Shale			20	
Coal, Redstone			*1*	
Sandstone and shale			45	
Coal, Pittsburg, roof:				
Coal		*3*	*2*	*6*
Clay		3		
Coal	*1*			
Clay	1			
Coal, Pittsburg, main bench			*7*	
			368	7

---

[a] Bull. U. S. Geol. Survey No. 65, 1891, p. 45.

On the Moses Smith farm, in Amwell Township, one-fourth mile northwest of Bissell, a diamond-drill hole was once sunk to the Pittsburg coal, and the record shows a good section of the Monongahela and part of the Washington formation. This is the best detailed section of the rocks available, and is as follows:

Record of diamond-drill hole near Bissell.

	Thickness.		Depth.	
	Ft.	*in.*	*Ft.*	*in.*
Washington formation	154		154	
Monongahela formation:				
Coal, Waynesburg	*6*		*160*	
Sandstone	14		174	
Limestone (Waynesburg [a])	16		....	
Shale, blue	1		191	
Limestone	6		197	
Shale, blue	12		209	
Shale, sandy	20		229	
Limestone	5		234	
Shale, light	15		249	
Limestone	7		256	
Shale, light (Benwood limestone)	10		266	
Sandstone	16		282	
Limestone	2		284	
Shale, light	5		289	
Limestone	9		298	
Shale, light	7		305	
Limestone	39		344	
Shale, gray	4		348	
Shale, sandy	8		356	
Sandstone, gray	9		365	
Shale, light	4		369	
Shale, dark, sandy	27		396	
Limestone (Fishpot)	32		428	
Shale, light	4		432	
Limestone	4		436	
Shale, light	9		445	
Shale, sandy	19		464	
Sandstone, gray	7		471	
Slate, black	2		473	
Slate, black	1	2	474	2
Coal	*1*	*4*		
Slate, black		4		
Coal		*4*		
Slate, black	1	4		
Fire clay (Pittsburg coal)		5	486	3
Slate, black		9		
Coal		*6*		
Slate	1	3		
Coal	*5*	*10*		
Slate, bottom		11	487	2
Limestone.				

[a] Identifications in parentheses are supplied by the writer.

A section was once exposed in a shaft sunk to the Pittsburg coal opposite the Chestnut street station, in Washington.[a] The upper 29 feet 6 inches of this belongs to the Washington formation, and the 8-inch coal is the Waynesburg seam.

Section in old shaft, Washington.

	Ft.	in.
Washington formation	29	6
Monongahela formation:		
Coal (Waynesburg)		*8*
Shale, gray	6	
Sandstone	5	
Limestone and shale (Benwood limestone), etc	170	
Slate, black	12	
Limestone, gray (Fishpot)	13	
Shale, blue	50	
Sandstone (Pittsburg)	15	
Shale	3	
Coal, Pittsburg	*5*	*6*
	280	8

About 1½ miles north of Washington is the old Enterprise shaft, sunk to the Pittsburg coal many years ago.[b] This gives only a partial section of the formation, as the remaining rocks lie above the surface.

Partial section of Monongahela formation in Enterprise shaft, 1½ miles north of Washington.

	Ft.	in.	Ft.	in.
Soil			4	
Limestone			45	
Coal, Sewickley				*4*
Limestone			30	
Shale			45	
Coal, Redstone			*3*	
Sandstone			20	
Shale			1	
Coal, Pittsburg:				
Roof division	2		*8*	*10*
Clay	1			
Lower division	5	10		

The principal evidence of the thickness of the formation is from a number of oil and gas wells which record both the Waynesburg and Pittsburg coals. Although it is necessary to make an allowance of a few feet for inaccuracies of measurement, these indicate that the formation is not at all uniform in thickness. The following is a list of wells giving the measurements between the top of the Waynesburg and the bottom of the Pittsburg coal in various parts of the quadrangle.

---

[a] Stevenson, J. J., Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 248.

[b] Stevenson, J. J., op. cit., p. 240.

Thickness of Monongahela formation in Amity quadrangle.

No. on Pl. I.	Name of well.	Location.	Thickness of Monongahela formation.
3	Baker	Amwell Township	[a]345
	Moses Smith (diamond drill)	....do	336
23	N. T. Clark No. 1	Borough of Deemston	339
32	Mrs. A. L. Hawkins No. 3	....do	340
34	L. V. Martindale No. 2	....do	338
44	J. L. Thompson No. 1	....do	348
45	J. L. Thompson No. 2	....do	366
46	J. L. Thompson No. 3	....do	345
47	J. L. Thompson No. 4	....do	347
48	J. L. Thompson No. 5	....do	337
54	Blakeley No. 1	East Bethlehem Township	[a]363
14	Mrs. A. L. Hawkins No. 2	Borough of Beallsville	340
15	Eaton Luse heirs No. 1	....do	326
56	Bristor Bros., No. 3	Morris Township, Greene County	[a]353
62	Elmas Carey, No. 1	Morris Township, Washington County	320
	Meloy, No. 1	....do	321
	J. C. Mounts	North Franklin Township	....
234	Washington Floral Co	South Strabane Township	352
273	N. T. Clark No. 2	West Bethlehem Township	340
285	J. C. Martin No. 1	....do	337
295	Joseph Ross No. 1	....do	[a]323
297	John C. Sargent No. 2	....do	[a]348
299	Thompson & Seaman Coal Co. No. 1	....do	350
308	S. F. Scott No. 1	West Pike Run Township	[a]308
	Average thickness		340

[a] In this instance the bottom of the Pittsburg coal is not given; it is estimated as being 8 feet (the average distance) below the top of the bed.

By comparison of these records it will be seen that while the lesser measurements are generally more abundant in the western portion there are also points in West Pike Run and West Bethlehem townships, etc., where the thickness is but little over 300 feet. Thicknesses of 345 feet and 352 feet are reported in western Amwell and in South Strabane townships. In general, however, the Monongahela formation in southwestern Pennsylvania grows thinner toward the northwest. In the northern part of this quadrangle no records are obtainable which report both coals, but from estimates of the interval made by subtracting elevations of the Pittsburg coal, as reported in wells, from those of neighboring outcrops of the Waynesburg coal, the thickness in that region seems to average less than 300 feet.

Distribution.—The formation outcrops mostly near the northern and eastern edges of the territory, but it also reaches the surface for about a mile on Little Tenmile Creek at Lone Pine. In the northwest corner of the quadrangle it covers the entire area west and north of Chartiers Creek, with the exception of a stretch near the main valley, occupied by Conemaugh rocks and Quaternary deposits; and it occupies a strip over a mile wide on the hillsides southeast of and parallel with the creek. In the valley of Little Chartiers Creek it extends from the edge of the quadrangle as far south as Wylandville and outcrops up the side valleys for 2 or 3 miles. In the northeast corner of the quadrangle nearly all of the area north of the Williamsport pike and east of a line drawn northward along Snipe Run, with the exception of a few hilltops, is covered by rocks of the Monongahela formation. A small area along Peters Creek consists of Conemaugh and Quaternary deposits. The Monongahela formation outcrops on the several branches of Pigeon Creek as far as Emery and Vanceville, and nearly to Three and Four. It also forms the greater portion of the area southeast of Zollarsville and Spring Hill.

ROCKS WHICH DO NOT OUTCROP.

GENERAL STATEMENT.

Sources of knowledge.—Information concerning the rocks which do not outcrop is derived entirely from the records of deep wells bored for gas and oil, and is, therefore, somewhat imperfect. In many cases records have been carelessly kept and beds important from a geologic standpoint, such as coals, bands of red rock, or limestones, have been overlooked or not recorded. In many cases only the oil and gas sands have been noted, thus leaving great gaps in the records. The methods of measurement also introduce some errors. While measurements to the principal oil and gas sands are frequently made by steel line, and are accurate, the depths and thicknesses of the various beds are generally determined by counting the turns of the cable on the shaft of the bull wheel, and errors may easily occur. In deep wells the stretching of the cable may cause an error of considerable magnitude. The difficulty of identifying rocks by the relative ease with which the drill penetrates them and by the drillings brought up in the sand pump is also likely to be a source of error. To this cause may be due many of the lithologic variations recorded in well sections. It may thus happen that important beds which are not recorded are not really absent, but have been overlooked. In some cases a heavy sandstone in one well might change to a highly arenaceous shale or shaly sandstone in a near-by well, and thus be regarded as "slate" or shale. At best, observations on rocks in deep-well sections must be confined almost wholly to their lithologic character. It is usually impossible to learn anything of the fossils by which the ages of the rocks might be determined.

Thickness.—The greatest thickness of the rocks pierced by the drill in the Amity quadrangle is in the Mrs. A. L. Hawkins No. 1 well (31[a]), 1.2 miles southwest of Beallsville. The total depth of this well is 3,611 feet, or 3,186 feet below the Pittsburg coal. As the lowest exposed horizon in the quadrangle is only a few feet below this coal, the thickness of the nonexposed rocks in the well is about 3,150 feet. Most of the wells in that part of the quadrangle average from 2,500 to 3,100 feet in depth. In the northwestern part they are shallower, averaging not more than 2,300 to 2,900 feet. In neighboring portions of Pennsylvania several deeper wells have been drilled. The deepest of these is a well 12 miles southeast of Pittsburg, which penetrated to a depth of 5,575 feet and is the deepest well in the United States. It started 130 feet below the Pittsburg coal. A very deep well has also been drilled near McCracken, in the western part of Greene County.

---

[a] Numbers in parentheses refer to locations of wells on the map (Pl. I, in pocket) and records given in the table, pp. 70-87.

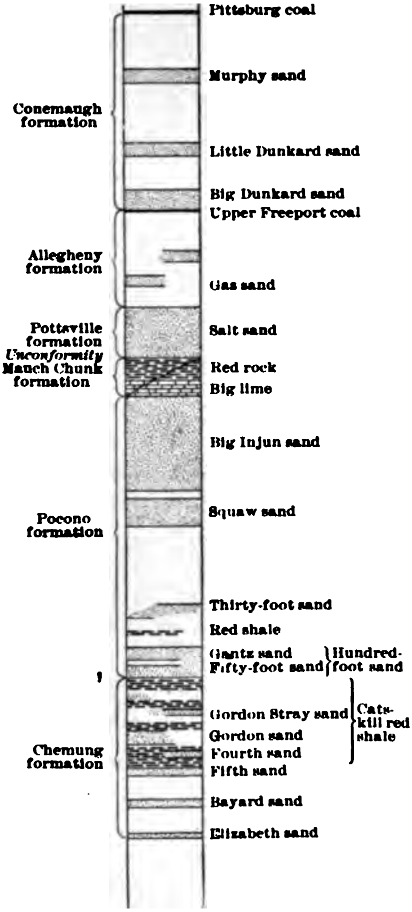


FIG. 1.—Generalized section of beds below the Pittsburg coal.

Datum horizon.—The Pittsburg coal, underlying nearly the entire quadrangle, is the most persistent and most easily identifiable horizon in southwestern Pennsylvania, and is always recognized by well drillers, who make their calculations of the depth to underlying oil and gas sands with reference to it. In this report this coal is therefore used as a datum horizon, to which the depths of other beds are generally referred.

CARBONIFEROUS SYSTEM.

PENNSYLVANIAN SERIES.

ROCKS BETWEEN THE PITTSBURG AND UPPER FREEPORT COALS (CONEMAUGH FORMATION).

Definition.—The rocks known as the Conemaugh formation comprise all those included between the Pittsburg coal at the top and the Upper Freeport coal at the base, both coals being excluded from the formation. In the reports of the Second Geological Survey these rocks were called the Lower Barren Measures.

Thickness.—The thickness of the Conemaugh formation in Pennsylvania varies from 500 to over 700 feet. In this quadrangle it is known only from well records, and as in the great majority of cases no coal has been recorded below the Pittsburg, not many data are at hand by which to judge the intervals. A few records, however, report the "Connellsville" coal, which is believed to be equivalent to the Upper Freeport bed of the Allegheny Valley. The C. M. Reed well, in North Strabane Township, reports the interval as 600 feet from the top of the Pittsburg to the top of the Freeport. The Reed well (265), in the borough of Washington, records the same interval as 595 feet. If 8 feet is allowed for the probable thickness of the Pittsburg coal, the thickness of the Conemaugh in the two wells is 592 and 587 feet, respectively. A number of wells in the gas field between Zollarsville and Beallsville report the Freeport coal, and the computed intervals are given under the heading "Coal" (pp. 88-117).

Character.—The Conemaugh formation consists principally of alternating shale, sandstone, and sandy shale, although thin limestones and occasional coals are known to occur in it. In many places in southwestern Pennsylvania it contains a number of beds of red shale of variable thickness. These do not occur at any regular horizon, but lie usually in the upper 400 feet of the formation. The Murphy and Little and Big Dunkard sands of the drillers, corresponding, respectively, to the Morgantown, Saltsburg, and Mahoning sandstones on the surface, are in this formation. Probably the most detailed section of the Conemaugh in the Amity quadrangle is that recorded in the Matilda Davis No. 2 well (29), in the borough of Deemston. The section is as follows:

Section of Conemaugh formation in Matilda Davis No. 2 well, Deemston Township.

	Feet.
Coal, Pittsburg.	
Lime	45
Slate	20
Lime	35
Slate	13
Lime	25
Red rock	10
Lime shells[a]	45
Slate	10
Lime	13
Slate	5
Lime	15
Sand	8
Lime	25
Sand	25
Lime	8
Red rock	31
Lime	12

---

[a] Almost all deep-well records contain frequent reports of such occurrences as "slate and shells," "sand and shells," or simply "shells." The "shells" referred to are not fossil shells of organisms, as in the ordinary sense of the word, but consist of alternating thin layers ("shelly layers") of shale or sandstone.

Section of Conemaugh formation in Matilda Davis No. 2 well, etc.—Continued.

	Feet.
Slate	60
Lime	5
Sand	43
Slate	12
Lime	50
Slate	7
Lime	31
Slate	35
Lime	9
	597
Coal, Upper Freeport.	

The complete record of this well is given graphically in Pl. II. It is probable that this is not strictly accurate, owing to the difference between the drillers' and geologists' interpretation of certain beds. Such possible discrepancies should be kept in mind in studying any record. It is especially probable in this particular case that some of the limestone noted is in reality hard sandstone, because in regions where the Conemaugh formation outcrops it contains only a small proportion of limestone.

On account of the variability of the strata and frequent inaccuracies in drillers' interpretations two sections are given below.

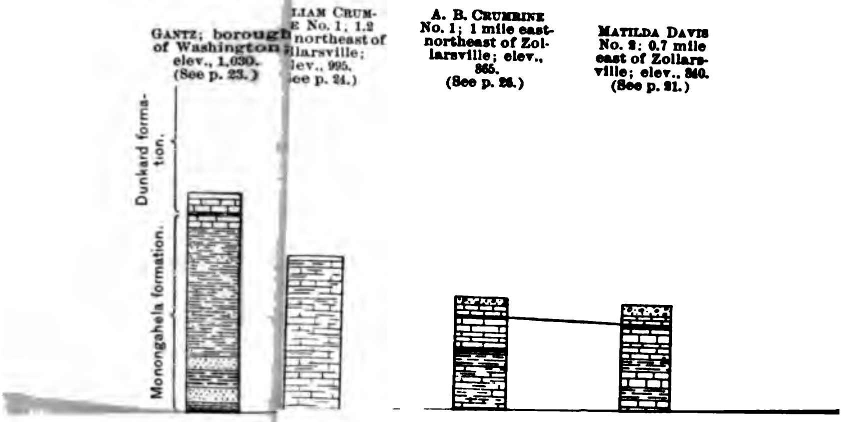
The section of the J. L. Thompson No. 5 well (48) is better than the average.

Section of Conemaugh formation in the J. L. Thompson No. 5 well, borough of Deemston.

	Feet.
Coal, Pittsburg.	
Slate	15
Lime	25
Slate	60
Red rock	10
Slate	40
Lime	30
Slate	20
Sand, Murphy	45
Red rock	60
Lime	30
Red rock	20
Sand, white	40
Slate, black	40
Slate	50
Sand, Dunkard[a]	50
	549
Coal, Upper Freeport.	

---

[a] The word "sand" in all discussions of the solid rock of this area is used in the sense for which it was coined by the well drillers, meaning any sandy stratum.


GANTZ; borough of Washington; elev., 1,030. (See p. 23.)
LIAM CRUM-
E No. 1; 1.2
northeast of
llarsville;
lev., 995.
ee p. 24.)
A. B. CRUMRINE No. 1; 1 mile east-northeast of Zollarsville; elev., 865. (See p. 26.)
MATILDA DAVIS No. 2; 0.7 mile east of Zollarsville; elev., 840. (See p. 21.)
Dunkard formation.
Monongahela formation.

The original Gantz well at Washington shows a fair section of the Conemaugh, although in this well the base of the formation is rather indefinite.

Section of Conemaugh formation in the Gantz well, Washington.

	Feet.
Coal, Pittsburg.	
Sandstone, soft	10
Slate	12
Shells, hard	2
Slate	10
Sandstone, hard, gray	11
Slate	30
Sandstone, white, soft	10
Slate	51
Sandstone, very hard	80
Slate	10
Limestone	5
Slate	15
Red rock	60
Slate and shells	40
Red rock	25
Slate	32
Red rock	25
Sandstone, white	20
Slate and shells	100
Sandstone, hard, gray	100
	648
Coal and slate.	

As this total is greater than the usual thickness of the Conemaugh formation there is some doubt whether the "coal and slate" occupies exactly the Upper Freeport horizon; but the lower limit of the formation is approximately correct.

In Pl. II are given records of eleven typical wells in the quadrangle, and by comparison of these records the relations of the various beds described and the limits of the formation can be seen. The coals denoting the upper and lower limits of the Conemaugh formation are shown in solid black, sandstone by dotted symbols, slate or shale by continuous or broken parallel lines, limestone by the block symbol, and sandy shale by a combination of lines and dots. The correlation lines other than for coals are represented by dotted lines.

ROCKS BETWEEN THE TOP OF THE UPPER FREEPORT COAL AND THE TOP OF THE POTTSVILLE SANDSTONE (ALLEGHENY FORMATION).

Definition.—Underlying the Conemaugh is the Allegheny formation, which may be defined as extending downward from the top of the Upper Freeport coal to the top of the Pottsville sandstone. This is the formation in which nearly all the workable coal beds in the lower part of the Pennsylvanian series occur. It was for a long time known by the name Lower Productive Measures, to distinguish it from the productive formation which lies above the Conemaugh.

Thickness.—Where exposed in western Pennsylvania the Allegheny varies in thickness from 270 to 370 feet, averaging about 300 feet. It is difficult to make any very definite determinations in a region where so few complete well records have been kept; but in general the 300-foot average is believed to hold.

Character.—The Allegheny formation consists of sandstone, shale, coal beds, and occasional thin limestones. In the vicinity of Connellsville and in the Beaver Valley, the nearest points where the formation is exposed, it commonly contains several valuable coal beds.

The general character and sequence of strata are shown by several well sections in the borough of Deemston, as follows:

Section of Allegheny formation in the J. L. Thompson No. 5 well (48), borough of Deemston.

	Feet.
Coal, Upper Freeport	5
Slate	25
Lime (Upper Freeport limestone)	15
Slate	80
Gas sand	45
Slate	25
Slate, black	25
Sand	25
Lime (Vanport limestone?)	15
Slate, black	50
	310

Section of Allegheny formation in the A. B. Crumrine No. 1 well (24), borough of Deemston.

	Feet
Coal, Upper Freeport	4
Slate	4
Lime (Upper Freeport limestone)	30
Slate	20
Sand	38
Slate, white	37
Slate, black	40
Sand	55
Slate	30
Lime (Vanport limestone?)	20
Slate	29
Sand	25
Lime	5
	317

The limestone bed occurring near the top of these sections is probably the Upper Freeport limestone. The thin limestone 50 to 60 feet above the bottom may be the Vanport. The sandstones of the formation are several in number and variable in their occurrence. Only one of them, the Gas sand, is reported by well drillers. This generally corresponds with the Kittanning bed of the surface, but sometimes with the Clarion or even with the Freeport sandstone.

POTTSVILLE SANDSTONE, OR SALT SAND (POTTSVILLE FORMATION).

Definition.—The Pottsville formation, frequently known as "the conglomerate," is the lowest in the Pennsylvanian series. It occurs directly beneath the Allegheny formation, and usually lies unconformably on the Mauch Chunk. In some regions, however, it rests directly on the Burgoon or Big Injun sandstone. The Pottsville formation is the Salt sand of well drillers.

Character and thickness.—In portions of Pennsylvania where it is exposed the Pottsville consists of two or more very massive and frequently conglomeratic sandstones, in some places separated by thin shales, carrying fire clay and coal beds. As recorded in wells in the Amity quadrangle, the formation is a sandstone varying from 60 to 170 feet in thickness and is frequently composed of two members, which probably correspond with the Homewood and Connoquenessing sandstones of the Beaver Valley. Between them a bed of shale 10 to 30 feet thick is sometimes reported and is probably equivalent to the Mercer member of other parts of Pennsylvania. Occasionally a record reports limestone in the Pottsville. The formation is a great source of salt water, which is encountered in drilling.

MISSISSIPPIAN SERIES.

ROCKS BETWEEN THE POTTSVILLE ("SALT SAND") AND BURGOON ("BIG INJUN") SANDSTONES (MAUCH CHUNK FORMATION).

Definition.—The Mauch Chunk formation may be defined as the rocks included between the Pottsville formation above and the Burgoon (Big Injun) sandstone below. The lower portion of the formation consists of a thick limestone, known to drillers as the Big lime. This is identical with the Greenbrier limestone, which outcrops on Chestnut Ridge and Laurel Hill to the east and which was called by the Second Geological Survey the Mountain limestone. The Mauch Chunk is frequently spoken of as the Mauch Chunk red shale, but this designation is hardly appropriate, because in addition to the limestone it also contains shale of other colors and, locally, sandstone.

Character and thickness.—The Mauch Chunk formation is variable in this part of Pennsylvania, as may be seen from the accompanying sample sections. In many records uncertainty exists regarding the upper limit of the formation, but in the absence of definite information the top is generally considered as coincident with the bottom of the thick sandstone overlying the red shale. The following records are typical of those in the Zollarsville field and vicinity. The greatest thickness recorded is about 200 feet, in the J. L. Thompson and other wells. From 50 to 90 feet of this is red shale, 50 to 100 feet at the bottom is limestone, and the rest is shale.

Section of Mauch Chunk formation in the A. C. Mitchell well, West Pike Run Township.

	Feet.
Slate	29
Red rock	10
Slate	10
Red rock	15
Lime	11
Slate	15
Little lime	8
Lime, red	17
Lime, white, Big lime	45
	160
Sand, Big Injun.	

Section of Mauch Chunk formation in the J. L. Thompson No. 5 well (48), borough of Deemston.

	Feet.
Slate, white	20
Red rock	5
Pink rock	52
Red rock	35
Slate	15
Little lime	10
Slate	10
Big lime	45
	192
Sand, Big Injun.	

Section of Mauch Chunk formation in the A. B. Crumrine well (24), borough of Deemston.

	Feet.
Slate	10
Lime	4
Slate	6
Lime	10
Red rock	15
Lime	6
Red rock	24
Slate	3
Lime	12
Slate	18
Little lime	8
Slate	5
Big lime	50
	171
Sand, Big Injun.	

These sections show a fair agreement in the character of the formation, though it will be seen that there is considerable variation in the occurrence of the red beds.

No sections from the western and northwestern parts of the quadrangle can be given on account of the extremely indefinite nature of the upper limit and the lack of complete records. In general, the interval between the Salt and Big Injun sands becomes thinner in that direction. In the Gantz well, for instance, the interval from the Pittsburg coal to the top of the Big Injun sand is only 1,111 feet. On the assumption that 600 feet is the most probable thickness of the Conemaugh, 300 feet of the Allegheny, and 150 feet of the Pottsville, there is left only 61 feet for the Mauch Chunk. According to correlations in Pl. IV (p. 44), the thickness in this well may amount to as much as 107 feet, consisting of 77 feet of black shale and 30 feet of limestone; but even this thickness is much less than that of the formation in other parts of the quadrangle.

Unconformity.—The irregularity in thickness of this formation is prominent throughout western Pennsylvania, and is caused by an unconformity between the Mauch Chunk and Pottsville formations, due to erosion after the deposition of the Mauch Chunk, and preceding that of the Pottsville. Owing to this feature the Mauch Chunk dies out entirely toward the north and west. The thinning is illustrated by many of the well sections in the Burgettstown quadrangle, northwest of the Amity. For instance, in the McKnight No. 3 well, in Chartiers Township, the interval from the top of the Salt sand to the top of the Big Injun is only about 190 feet. In some wells in Smith Township it is as low as 100 feet. Nowhere in this area is red shale reported in the interval. In two Caltergahn wells in Chartiers Township 35 and 103 feet of black shale are reported. In certain wells in the Burgettstown quadrangle this shale is entirely missing, and the Salt sand rests directly upon the Big Injun. One such occurrence has been reported in the northern part of the Amity quadrangle, in the Thomas Templeton No. 1 well (111), at Linden.

Just where the Mauch Chunk formation disappears, whether the black shale between the Salt and Big Injun sands is Mauch Chunk or Pottsville, and whether all reports of the running together of the sands are correct, are questions which at this date can not be definitely answered.

Greenbrier limestone (*Big lime*).—This bed is well developed beneath the greater portion of the quadrangle, but northwest of Washington it seems to die out. A thinning toward the north has also been noticed by Campbell in the Latrobe and other quadrangles. The disappearance of the Greenbrier toward the northwest is entirely independent of the unconformity mentioned above.

From the well sections it will be seen that the limestone is frequently double, and this feature becomes more conspicuous toward the southwest. The upper bed is known as the Little lime and the lower bed as the Big lime, and they are usually separated by a thin, soft shale, which breaks up in a very peculiar manner into small pieces about the size of a slate pencil. The drill sinks rapidly in this shale as it emerges from the hard limestone above, and the shale tends to "cave in" after removal of the drill. The parting is therefore known to the drillers as the Pencil cave.

ROCKS BETWEEN THE GREENBRIER LIMESTONE AND THE CATSKILL RED BEDS (POCONO FORMATION).

General statement.—The Pocono is the lowest formation in the Carboniferous system. Its uppermost member, which corresponds with the Big Injun sand of the drillers (Burgoon sandstone of the Allegheny Front), extends downward 300 to 900 feet, according to different authorities. Considerable doubt exists as to the true position of its base, as there is a strong resemblance between the rocks contained in it and those of the Chemung formation at the top of the Devonian, and even where they outcrop it is difficult to draw a definite line of separation between them. Such a boundary can be accurately defined only on the evidence of fossils, and in a region where the only information comes from well sections no fossils are known. The weight of evidence in regard to the position of this boundary seems to be in favor of the lowest limit (over 800 feet), and in this report it is drawn provisionally at the top of a group of red shales just below the base of the Fifty-foot sand.[a]

Character and thickness.—If the boundary as just defined is correct, the average thickness of the Pocono formation in the wells where its red-shale base can be determined is 875 feet. One of the best sections of the formation is that of the J. L. Thompson No. 4 well (47), given below:

Section of Pocono formation in the J. L. Thompson No. 4 well, borough of Deemston

	Feet
Sand, Big Injun	60
Break	12
Sand, Big Injun, bottom portion	200
Slate	40
Sand, Squaw	130
Slate and shells	130
Sand, Thirty-foot	60
Red rock (Bedford?)	10
Slate and shells	50
Sand, Gantz	20
Slate	20
Fifty-foot sand	25
Slate and shells	15
Sand	20
Slate and sand shells	40
Sand	10
Slate and shells	20
	862

Directly below the bottom of this section is 10 feet of red rock, which is considered the top of the Devonian system. The Thompson section is fairly typical, but for comparison a second section, that of the Luse well (15) near Beallsville, is given.

---

[a] For a discussion of the evidence on the position of this boundary, see the Amity folio (No. 144), Geologic Atlas U. S.

Section of Pocono formation in the Luse well near Beallsville.

	Feet.
Sand, Big Injun	290
Slate	20
Slate shells	45
Sand	113
Slate shells	36
Lime	65
Slate	6
Lime	21
Slate	5
Slate shells	14
Hard lime	20
Red rock (Bedford?)	20
Lime	5
Slate	17
Lime	13
Sand, Gantz	30
Slate	21
Sand, Fifty-foot	24
Slate shells	5
Sand	35
Slate and shells	35
	860

This formation contains five principal sandstone horizons—the Big Injun, Squaw, Thirty-foot, Gantz, and Fifty-foot sands. The most important of these geologically is the Big Injun, Mountain, or Manifold sand, as it is variously called. In portions of Pennsylvania where it outcrops it now goes by the name Burgoon sandstone. In Washington County this sandstone averages 250 feet thick and is very persistent. Its top is always in contact with the Greenbrier limestone and is therefore perfectly definite and very convenient as a datum for well drillers. The Gantz and Fifty-foot sands form a very prominent oil horizon, made famous by many old wells in the Washington field. These sands are recognizable in most of the wells. Toward the west, northwest, and southwest they run together and are known as the Hundred-foot sand. The various sands recognized by the drillers are described in detail under the heading "Oil and gas" (pp. 47–59).

Red shale (*Bedford?*).—In the Burgettstown quadrangle a bed of red shale occurs at many places between the Thirty-foot and Gantz sands and may be a part of the Bedford group of Ohio. On account of the scarcity of complete records in the Amity quadrangle it is known here in only five wells, but when properly recorded it ought to be a fair datum horizon. In the J. M. Miller well (306), in West Pike Run Township, it is 5 feet thick; in the Luse well (15), at Beallsville, 20 feet; in the J. L. Thompson Nos. 3 and 4 wells (46, 47), in the borough of Deemston, 10 feet. In the Gantz well, at Washington, it is recorded as 8 feet of "reddish sand." In parts of western Pennsylvania it amounts to as much as 80 to 120 feet. In places, but not everywhere, it occurs directly below the Thirty-foot sand.

DEVONIAN SYSTEM.

ROCKS BELOW THE TOP OF THE CATSKILL RED BEDS (CHEMUNG FORMATION).

General character.—Throughout the Amity quadrangle the Devonian rocks lie far below the surface. As has been said, the top of the system is very indefinite, but it has been provisionally placed at about the top of the first red shale below the Fifty-foot sand.

The Devonian rocks have been penetrated by wells to a depth of over 1,000 feet. All these rocks are believed to belong to the Chemung formation. The greatest thickness is recorded in the Mrs. A. L. Hawkins No. 1 well (31), near Beallsville. The record of this well is very meager, but a number of shallower wells furnish good sections as deep as the Elizabeth sand. The deepest complete section is on the A. C. Mitchell farm, in West Pike Run Township. The top of the formation here is in considerable doubt, as the red beds are less conspicuous than in some of the neighboring wells, and the section is therefore made to include all beds up to the Fifty-foot sand. To be in harmony with other wells, the top of the Devonian system should here be placed approximately 30 to 50 feet below the bottom of this sand.

Partial section of rocks penetrated by the A. C. Mitchell well, West Pike Run Township.

		Feet.
Sand, Fifty-foot	probably Carboniferous	85
Slate		5
Sand		10
Slate		14
Sand		4
Slate		14
Sand		13
Shells		10
Red rock		5
Shells	Catskill beds	20
Sand, Stray		24
Red rock		21
Sand, Gordon		60
Red rock		55
Shells		30
Slate		10
Sand		15
Slate		5
Sand, Bayard		65
Slate		27
Shells and slate		38
Sand, Elizabeth		6
Slate		169
Shells		167
		872

Two of the best sections of the Devonian are furnished by the J. L. Thompson No. 3 well (46) and the Luse well (15), and these are given for comparison.

Section of Chemung formation in the J. L. Thompson No. 3 well, borough of Deemston.

		Feet.
Red rock	Catskill beds	20
Sand		20
Slate and shells		30
Red rock		10
Slate and shells		55
Red rock		55
Dark slate		10
Red rock		20
Sand		25
Slate and shells		52
Sand, Bayard		15
Slate and shells		69
Sand, Elizabeth		12
Slate		10
		403

Section of Chemung formation in the Luse well, near Beallsville.

		Feet.
Red rock	Catskill beds	15
Slate and shells		40
Red rock		30
Slate and shells		51
Red rock		39
Slate and shells		65
Sand, Fifth		20
Red rock		28
Sand		17
Slate		85
Sand, Bayard		6
Slate		28
Sand		6
Slate		73
		503

Catskill (*or sub-Blairsville*) *beds.*—In all the complete records which penetrate the Chemung formation in this quadrangle an interval of 100 to 300 feet near the top of the formation is occupied by two to five beds of red shale, separated by sandstone, shale, and shelly layers. Similar red beds, somewhat thicker but at approximately the same interval (900 to 1,100 feet below the top of the Big Injun) have been noted by M. R. Campbell in many wells in the Latrobe quadrangle and vicinity, and have been named the sub-Blairsville member, for the reason that the wells in which they were reported lie near the town of Blairsville, Indiana County. They are believed to be the westward feathering out of the Catskill formation, which, in eastern Pennsylvania and the Catskill Mountain region, is several hundred feet thick, but which in this region is thinner and is dovetailed into the upper part of the Chemung formation.

The general character of the group containing the red beds can be seen from the well sections given in Pl. II (p. 22). The individual beds vary from 10 to 60 feet in thickness and the total amount of red material in any one section is usually between 75 and 150 feet. In the Latrobe quadrangle the thickness reaches 300 to 400 feet and the member is more of a unit, so that it might almost be termed a formation, but in the direction of the Amity quadrangle it becomes thinner and dovetails into the Chemung formation proper. This method of dying out explains the great variation of the red beds in the different sections and why they do not always occur at the exact top of the formation.

Sandstones.—Between the horizons of these red beds several oil and gas sands, notably the Gordon, Fourth, and Fifth, are frequently reported. The very fact that these sands occur interstratified between red beds, which appear and disappear and sometimes thicken up to the exclusion of the sands, indicates the nonpersistency of most of the sands in this region. The wells penetrating these beds are located in the southeastern part of the quadrangle and nothing is known of the behavior of the beds in other sections. It is considered very probable that toward the northwest they are more broken up, and the Gordon and other sands become more persistent.

Most of the sands in the Pocono formation, commonly recognized by drillers, are shown by records to be encountered rather regularly, and are therefore considered fairly persistent beds. As the drill descends into the underlying rocks, however, it penetrates beds of more and more variable character; and even the most important oil and gas sands are encountered with much less regularity than in the higher formations. These variations are so great that it is now considered probable that the sandstone horizons in the upper part of the Chemung formation are not persistent members underlying the whole area, but are in the nature of lentils, similar to the sandstone lentils of the Allegheny and Conemaugh formations outcropping at the surface. This is in harmony with the character of the Chemung formation in regions where it outcrops.

The principal sands recognized by drillers in the Chemung formation are (from the top downward) the Gordon Stray or Nineveh Thirty-foot, Gordon, Fourth, Fifth, Bayard, and Elizabeth. Of these the Bayard and Elizabeth are the only ones which are at all persistent, as they occur below the variable Catskill beds. A description of the various sands is given in the section on oil and gas (pp. 47–59).

BEDS LOWER THAN THOSE PENETRATED IN THE AMITY QUADRANGLE.

The deepest well in the Amity quadrangle penetrates to a depth of 2,664 feet below the Pittsburg coal, or about 650 to 700 feet below the Elizabeth sand, and but scanty data are given about the beds below the Elizabeth. The nearest point at which anything is known of the underlying beds is at West Elizabeth, Allegheny County, 12 miles southeast of Pittsburg, where a well on the William Bedell farm was drilled to a depth of 5,575 feet. As this is the deepest well in the United States, and as it furnishes a key to the geology beneath Washington County, the record is given here in full; with geologic interpretations. The mouth of the well is 130 feet below the Pittsburg coal.

Record of deep well near West Elizabeth.[a]

Formation.	Record.	Thickness.	Depth.
		Feet.	*Feet.*
Conemaugh	Slate	40	40
	Limestone	10	50
	Shale	80	130
	Slate	105	235
	Sand	30	265
	Slate	40	305
	Coal (Bakerstown?)	*3*	308
	Slate	100	408
	Coal	*2*	410
	Slate	75	485
	Sand	40	525
	Shale	10	535
Allegheny	*Coal (Upper Freeport?)*	*2*	537
	Slate	25	562
	Sand	65	627
	Shale	15	642
	Coal (Middle Kittanning?)	*3*	645
	Limestone	10	655
	Slate	30	685
	Limestone	15	700
	Slate	50	750
	Sand	35	785
	Slate	5	790
Pottsville	Sand, Salt	95	885
	Slate and shells	115	1,000
	Slate	30	1,030
Mauch Chunk	Red rock	20	1,050
	Big lime	50	1,100
Pocono	Sand, Big Injun	310	1,410
	Slate and shells	60	1,470
	Sand	15	1,485
	Slate	7	1,492
	Sand	5	1,497
	Slate	18	1,515
	Sand (Thirty-foot or Berea)	50	1,565
	Slate and shells	60	1,625
	Limestone	10	1,635

[a] White, I. C., West Virginia Geol. Survey, vol. 1 (a), 1904, p. 104.

Record of deep well near West Elizabeth—Continued.

Formation.	Record.	Thickness.	Depth.
		Feet.	*Feet.*
Pocono (continued)	Slate and shells	100	1,735
	Sand, Gantz?	25	1,760
	Slate and shells	20	1,780
	Limestone	10	1,790
	Slate	20	1,810
	Sand	15	1,825
	Slate and shells	45	1,870
	Sand	20	1,890
	Slate	5	1,895
Catskill	Sand, Butler Thirty-foot	40	1,935
	Slate	3	1,938
	Sand	18	1,956
	Slate Stray	30	1,986
	Sand	7	1,993
	Red rock	3	1,996
	Sand, Gordon, Third, etc	65	2,061
	Red rock	5	2,066
	Sand, Fourth	30	2,096
	Red rock and shells	15	2,111
	Slate and shells	15	2,126
	Sand	5	2,131
	Slate	3	2,134
	Sand	18	2,152
	Red rock and shells	30	2,182
	Sand, Fifth or McDonald	25	2,207
	Red rock and shells	35	2,242
	Slate	10	2,252
	Sand	5	2,257
	Slate and shells	25	2,282
	Sand, Bayard; a little gas	5	2,287
	Sand	10	2,297
	Red rock	25	2,322
	Slate and shells	75	2,397
	Sand, Elizabeth	3	2,400
	Shells	200	2,600
	Slate	150	2,750
	Slate and shells	200	2,950
	Slate	100	3,050
	Limestone and shells	100	3,150
	Sand, Speechley	15	3,165
	Slate	335	3,500
	Sand (Bradford), trace of oil	20	3,520
	Slate and shells	955	4,475
	Slate	23	4,498
	Shells	2	4,500
	Slate	32	4,532
	Shells	13	4,545
	Slate	25	4,570
	Limestone	20	4,590
	Slate	10	4,600
	Sand	30	4,630
	Slate	40	4,670
	Limestone	20	4,690
	Slate	20	4,710

Record of deep well near West Elizabeth—Continued.

Formation.	Record.	Thickness.	Depth.
		Feet.	*Feet.*
	Shells	15	4,725
	Slate	15	4,740
	Slate and shells	10	4,750
	Sand	20	4,770
	Slate	10	4,780
	Limestone	10	4,790
	Slate	20	4,810
	Shells	10	4,820
	Slate	20	4,840
	Limestone	15	4,855
	Slate	20	4,875
	Shells	10	4,885
	Slate	20	4,875
	Shells	10	4,885
	Slate	5	4,890
	Slate and shells	10	4,900
	Slate	15	4,915
	Shells	5	4,920
	Slate	30	4,950
	Shells	5	4,955
	Slate	45	5,000
	Limestone	10	5,010
	Slate	10	5,020
	Slate and shells	10	5,030
	Slate	20	5,050
	Limestone	10	5,060
	Slate	10	5,070
	Slate and shells	10	5,080
	Limestone	5	5,085
	Slate	10	5,095
	Slate and shells	5	5,100
	Slate	30	5,130
	Limestone	10	5,140
	Slate	20	5,160
	Limestone	10	5,170
	Slate	10	5,180
	Limestone	50	5,230
	Slate	30	5,260
	Limestone	10	5,270
	Slate	20	5,290
	Limestone	40	5,330
	Slate	30	5,360
	Limestone	5	5,365
	Slate	15	5,380
	Limestone	10	5,390
	Slate	20	5,410
	Slate and shells	20	5,430
	Slate	15	5,445
	Limestone	5	5,450
	Slate	20	5,470
	Slate and shells	10	5,480
	Slate	95	5,575

The following quotation from White's report is as definite a statement as can be made of the probable correlations for the rocks below the Catskill red beds:

> The hole stopped in a dark shale supposed to be the Marcellus, and probably not more than 100 feet above the horizon of the Corniferous limestone, although of course this is a mere inference based upon the fact that in the Conway deep well near Franklin, Pa., the top of the Corniferous was struck at 3,608 feet below the top of the Venango oil sand group, while the drill in the Bedell well stopped at 3,840 feet below the same horizon, and hence the Devonian shales could not extend much deeper. The sand at 3,150 feet has been doubtfully identified with the Speechley horizon, since it underlies the Pittsburg coal by an interval (3,280 feet) 200 feet greater than in Butler County. This, however, would agree with the general southeastward thickening, and is what would be expected. Messrs. Young and Crocker are responsible for the identification with the Bradford horizon of the sand struck at 3,500 feet.
>
> The Warren sand, which, according to Oliphant, lies 350 feet above the Speechley sand, or 500 feet below the top of the Fourth sand, does not appear to have been represented by any distinct sand in this Bedell record. Its horizon belongs near the bottom of the 200 feet of shells, the top of which was struck at 2,400 feet.

GEOLOGIC STRUCTURE.

METHOD OF MAPPING.

Structure contours.—The method of representing the structure or "lay" of the beds is as follows: The top or bottom of some persistent and easily recognizable stratum is selected as a datum surface, and its elevation above sea level determined at as many points as possible. In the Amity quadrangle the horizon selected is the bottom of the Pittsburg coal, the best known and most persistent bed in the region. The structure is shown on the geologic map, Pl. I (pocket), by means of red contour lines. These are drawn at uniform intervals above sea level, and all points on a given contour have the same elevation. In other words, a given structure contour is the line of intersection of the datum surface with a horizontal plane, all points of which have the same elevation above sea level. For instance, the Pittsburg coal at all points along the 650-foot contour has an elevation of 650 feet above sea level. It descends in the direction of the 600-foot contour and rises toward the 700-foot contour.

The intersection of a surface contour with a structure contour of the same elevation marks a point on the outcrop of the Pittsburg coal. At points where the elevation of the surface is greater than that of the coal, the approximate depth of the coal below the surface can readily be found by subtracting the elevation of the structure contour from that of the surface contour. Where the elevation of the surface is less than the corresponding elevation of the coal, the latter has been removed by erosion and the contours simply show the structure. In case the depths of other beds than the Pittsburg are desired, their intervals above or below this must be subtracted or added to the depth of the Pittsburg coal.

To illustrate the use of structure contours, we will suppose that the depth of the Pittsburg coal is desired at the junction of Daniels and Little Daniels runs, in West Bethlehem Township. As can be seen by the map, the elevation of the bottom of the valley at this point is about 890 feet, and the point is very close to the 500-foot structure contour; therefore the Pittsburg coal is calculated to be here about 390 feet (890 – 500) below the surface.

Degree of accuracy.—It should be borne in mind that it is impossible to make structure contours strictly accurate in all parts of the field. Over large areas there are no mines nor wells by which the exact depth of the coal below the surface can be determined. In such instances it is necessary to depend on estimated intervals between the coal and beds which show in outcrop, and as the intervals are in no case constant over any considerable area an error may be introduced which will affect the drawing of the structure contours. In this quadrangle, however, the inaccuracy is probably nowhere very great. By reference to the map, it will be noticed that in certain localities the contours have many waves and turns, while in other parts of the quadrangle they run for miles in long regular curves. This difference is due partly to the greater regularity of the folds in certain regions, but more largely to the greater amount of data that could be secured in such mining districts as Ellsworth, Peters Creek, and Chartiers Creek. In these fields the location of the contours was determined from mine maps showing the elevations of the coal in the areas which have been worked, and in such areas their accuracy is good. In regions where a great many well records are available, as in the Zollarsville field, the structure is likewise more accurate than in portions of the quadrangle that lack such data.

In making the studies for this map and report all roads in the quadrangle have been traversed and the positions of the outcropping rocks noted. These data have been supplemented by the records of as many wells and drill holes in the quadrangle as could be obtained. It is believed, therefore, that the structure of the territory has been determined with a good degree of accuracy.

Limits of error.—In general, the structure-contour interval in a given area is decided by two factors—(1) the steepness of the dip, and (2) the accuracy and abundance of the data available. The Survey is indebted for much valuable information to all the oil and gas operators who have generously furnished well records, and to the coal operators, who have allowed the use of their mine levels. In a region like this, where the dips are all fairly gentle, only the second factor has to be considered. Obviously, it is useless to make the contour interval less than the "limit of error." For example, if over a given area the elevation of the datum horizon was determined to an accuracy of within 50 feet, it would be useless to attempt to draw contours with a

25-foot interval. Moreover, such a representation would be misleading to the reader, who would be led to believe that the elevation at any given point was accurate within 25 feet, which would not be the case. In general, then, the limit of error for any area is not greater than the contour interval.

This point has an important bearing on the structure of the Amity quadrangle as represented by the contours. With the exception [illegible] those in the Zollarsville gas field, nearly all the wells in the quadrangle were drilled years ago, at a time when records were generally kept poorly, or not at all, and in some parts of the quadrangle, on account of the unreliability of many records and the absence of wells, no figures are available to determine the depth of the Pittsburg coal, or to check surface tracings and correlations. It must be remembered, also, that the intervals between the surface rocks and the coal are irregular, [illegible] explained on page 42. Consequently there are few parts of the quadrangle for which it would be safe to say with certainty that the contours on the Pittsburg coal are accurate enough to justify a 25-foot interval. The closer interval in the Claysville quadrangle, to the west, was made possible by the greater abundance and recency of the drillings, and also by the fact that in that area the more expensive but somewhat more accurate method of leveling with the spirit level to outcrops and wells was used.

STRUCTURE IN DETAIL.

In order to show the relations of the structure in this quadrangle with that in adjacent regions to the east and south, Pl. III has been prepared, giving by contour lines the lay of the Pittsburg coal in the Amity, Brownsville, Rogersville, Waynesburg, and Masontown quadrangles. This plate shows that the general structural features consist of broad anticlines and synclines, which are most prominent along the eastern border of the Appalachian basin and which become gentler in dip and less continuous toward the west.

STRUCTURE OF PITTSBURG COAL.

The geologic structure of the Amity quadrangle as represented by the deformation of the Pittsburg coal is shown in Pl. I (pocket). The principal features are three anticlines and two synclines, all trending in a general northeast-southwest direction. These will be described in order from east to west.

BELLEVERNON ANTICLINE.

This was called the Waynesburg anticline by J. J. Stevenson in his report published in 1876[a]. He also applied the same name to the syncline lying west of the anticline. When the Brownsville quad-

---

[a] Second Geol. Survey Pennsylvania, Rept. K.

rangle, east of the Amity, was surveyed in 1901 there was some doubt whether the anticline crossing Monongahela River near Bellevernon was continuous with the one passing near Waynesburg, named by Stevenson. On account of this uncertainty and the fact that the term Waynesburg had been applied to two structural features this axis in the Brownsville quadrangle was named by M. R. Campbell[a] the Bellevernon anticline, and this name was continued by R. W. Stone in the Waynesburg quadrangle[b] surveyed a year later.

The anticline crosses the southeast corner of the Amity quadrangle and only about 1½ miles of the axis lies in this territory. The elevation of the Pittsburg coal on its crest is 800 to 840 feet.

WAYNESBURG (PIGEON CREEK) SYNCLINE.

This feature consists of a broad structural trough 10 miles wide lying between the Bellevernon anticline on the east and the Amity anticline on the west. It was named the Waynesburg syncline by Stevenson, but on account of doubt as to its continuity with the syncline having the same relations in the Brownsville quadrangle it was termed by Campbell[c] the Pigeon Creek syncline, after Pigeon Creek, in this county. The present survey demonstrated that the two synclines are one and the same, and since the name Waynesburg had priority the term Pigeon Creek was discarded in its favor.

This syncline is a broad structural basin with generally low dips. The axis enters the quadrangle at Bentleyville and takes a slightly meandering course, averaging about S. 40° W., to the southern edge of the quadrangle. From Bentleyville it follows the valley of Pigeon Creek to Three and Four, where it turns southward and passes half a mile east of Scenery Hill, crossing West Bethlehem Township, and leaves the quadrangle directly south of Bissell.

At the point where the axis of the trough enters the quadrangle from the east the Pittsburg coal is at an elevation of about 750 feet. From this point it descends gradually to the southwest until at the Greene County line the coal is less than 400 feet above sea level. Throughout the basin the average dip is less than 100 feet per mile, except on the eastern side of the axis, between Zollarsville and Beallsville, where for short distances it is as much as 150 feet per mile. In this section the structure is largely determined from well records, and shows several rather peculiar nose-like projections from the flank of the anticline. These are presumably about as represented, as the well records seem to be mostly good, but in all cases due allowance should be made for the possibility of errors in the records. In the center of the trough, between Bissell and Scenery Hill, data for determining the depth of the Pittsburg coal are few and it is possible that the basin may be somewhat deeper than it is shown.

---

[a] Geologic Atlas U. S., folio 94, U. S. Geol. Survey, 1903.
[b] Idem, folio 121, 1905.
[c] Op. cit.

AMITY ANTICLINE.

From the Waynesburg syncline the rocks rise gently to the northwest to the crest of the Amity anticline. This was called the Pinhook anticline by Stevenson and White in their reports, the term being taken from a name formerly applied to the village of Lone Pine.[a] The name Pinhook has long since gone out of usage, and since the village of Amity is located almost directly on the axis this name was adopted by Stone in the Waynesburg folio and is here used for the northern extension of the same anticline.

The axis of this anticline crosses the Greene County line near the boundary between Morris and Washington townships. From this point it takes a slight bend or offset to the east, then continues about N. 35° E., passing just east of Amity and through Lone Pine, and crossing the National pike 4 miles southeast of South Strabane post-office. Beyond this place there is another slight eastward deflection, but within 2 miles the axis veers to the north again and takes a course about N. 30° E., passing west of Vanceville, through Kammerer, and across Nottingham Township to Peters Creek at Anderson. At this place its location was very definitely determined, as it passes through the Blanche mine of the Pittsburg Coal Company.

On the Greene County line the Pittsburg coal is at an elevation of a little over 450 feet, this point being on a sag almost connecting the Waynesburg and Nineveh synclines. South of Tenmile Creek the axis commences to rise at an average rate of less than 50 feet per mile, until 1½ miles south of the National pike it forms an imperfect dome with the Pittsburg coal, as determined by well records, at an elevation of something over 700 feet. Beyond this point the rise does not average more than 20 or 30 feet per mile, except north of Kammerer. A mile south of Peters Creek the axis rises abruptly, bringing the coal from an elevation of less than 900 feet up to 1,040 feet just outside the quadrangle. At its north end this anticline is identical with the Peters Creek anticline described by Stevenson.

On the eastern border of the quadrangle, in Nottingham Township, east of the Amity anticline, a local trough extends into the area for a distance of over 2 miles. It trends west-southwestward, directly toward another small indentation in the anticline. This feature is evidently the cause of the rather sudden deflection of the Amity axis at Mingo Creek, and there seems to be a slight depression of the axis here. There is no true cross syncline, however.

At a number of localities on this anticline the lay of the coal is rather uncertain, owing to lack of available data. West of Lone Pine and Amity the dip ranges from 100 to 150 feet per mile toward the Nineveh syncline. Farther north it becomes less steep, except between Kammerer and Munntown, where it is estimated to be as much as 100 feet per mile toward the southwest.

---

[a] Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 27.

NINEVEH SYNCLINE.

This syncline was named by Stevenson in his report on Washington and Green counties from the village of Nineveh, Greene County, near which the axis passes. From that place it runs northeastward and enters the Amity quadrangle west of the village of Sunset. It takes a course averaging N. 42° E. to a point about 2 miles north of South Strabane post-office, whence it trends N. 10° E. nearly to Linden. At this place it makes another slight bend to the east, and leaves the quadrangle just east of Little Chartiers Creek.

The average breadth of this trough in the Amity quadrangle is about 9 miles. Near Sunset, where the axis enters the quadrangle, the elevation of the Pittsburg coal is supposed to be about 350 feet. From this point the rocks rise gently to the northeast as far as Gambles, where the elevation of the coal is a little above 700 feet. Between Gambles and the edge of the quadrangle is a broad, rather flat, structural area, marked by a slight dome and a similar little basin, shown on the map. These are determined by well records. East of Wylandville an arm of the basin extends to the east, as if to cut across the Amity anticline, but dies out before reaching Kammerer. In general, the dips in the Nineveh syncline are very gentle, but on the flank of the Amity anticline, between Amity and Mount Pleasant, they amount in places to 150 feet per mile, and on the Washington anticline they reach an extreme of 250 feet per mile for a short distance northeast of Washington.

WASHINGTON ANTICLINE.

The axis of this anticline enters the Amity quadrangle just south of Chartiers Creek, leaving the quadrangle half a mile west of Houston. The crest is broad and flat, and the coal varies in elevation from 950 feet at the south, to nearly 1,050 feet at the north. To the southeast, it descends rather steeply into the Nineveh syncline. This relatively steep dip is interesting in view of the fact that it is along this slope that the famous Washington oil field is situated. Numerous oil wells in this section have assisted materially in the accurate determination of the structure.

Throughout the quadrangle, all the folds are plunging toward the southwest, in conformity with the general dip toward the center of the Appalachian coal basin.

RELATION OF STRUCTURE OF PITTSBURG COAL TO STRUCTURE OF OTHER BEDS.

LACK OF PARALLELISM BETWEEN BEDS.

In using the contours represented on the map, it should be remembered that few beds are exactly parallel, and hence allowance must be made for the increase and diminution of intervals in various directions. For instance, the Upper Washington limestone, one of the most persistent outcropping beds, varies in this quadrangle from 630 to 710 feet above the Pittsburg coal, and the Waynesburg coal varies from 290 to 360 feet above the same bed. Some of the formations below the surface vary even more than this, as shown in the table of oil and gas sands (pp. 70–87). The causes of variation are twofold—(1) the slight increase and decrease in thickness of various beds due to differences in sedimentation, and (2) the marked variations in the Mauch Chunk formation, owing to an unconformity at its top. The thickness of the Mauch Chunk decreases in general from southeast to northwest.

STRUCTURE OF GANTZ SAND.

It has been said that the Mauch Chunk decreases in thickness from nearly 200 feet at Deemston until it feathers out northwest of Washington. It is even probable that in the northwest corner of the quadrangle, the Big Injun also may be eroded somewhat. Fig. 3 (p. 53) shows graphically the interval between the Pittsburg coal and the Gantz sand, decreasing from 1,960 to 1,800 feet. As determinations of this interval at many points are not based on steel-line measurements, the lines of equal interval may be somewhat in error. As a name for these lines the term isochore is suggested. The word is derived from the Greek *isos* (equal) and *chora* (space), and means lines of equal space, or equal interval. That is, at all points along a given line the interval between the Pittsburg coal and the Gantz sand is the same. In order to determine the elevation of the Gantz sand at any point it is only necessary to find the approximate interval on fig. 3 and subtract it from the figures given for the Pittsburg coal for the same point on the general map.

MINERAL RESOURCES.

PETROLEUM AND NATURAL GAS.

DISTRIBUTION OF OIL AND GAS FIELDS IN THE AMITY QUADRANGLE.

Fig. 2 is a map of western Pennsylvania and portions of southern New York, eastern Ohio, and northern Maryland and West Virginia, illustrating the distribution of oil and gas fields in the northern Appalachians. The oil fields are represented by the dark shade, the gas fields by the lighter shade. The Amity quadrangle, with its producing areas, is shown near the southwest corner of Pennsylvania.

While oil and gas wells are widely scattered over the territory, the great majority of them are limited to certain groups or fields, in which the oil and gas appear to occur in so-called pools or reservoirs of some extent. The term field, as used in this report, means simply a group of producing wells, or wells which have produced in the past, and it is not implied that outside of the field the territory is unproductive. It is probable that in time other sections of the region will be found to contain more or less oil and gas.

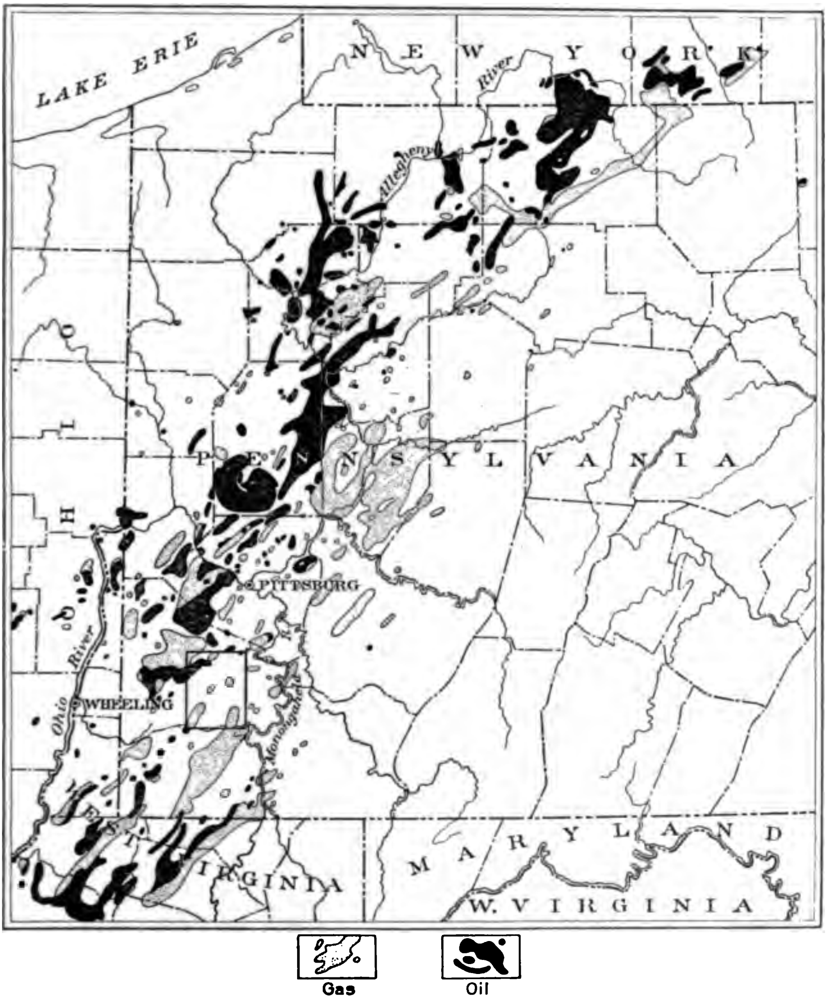


FIG. 2.—Map of oil- and gas-producing areas in the northern Appalachians.

In this quadrangle oil is much more limited in its occurrence than gas, and so far as known it occurs almost entirely in one area—the

Washington field. This field extends in a northeast direction from a point near Claysville, in the western part of the county, through the town of Washington and across South and North Strabane townships to the vicinity of Linden. The field includes the Morgan, Willetts, Davis, Taylor, Barre, Smith, Manifold, Munce, Cameron, Thome, Wright, Linn, Rooney, Martin, Wade, Kunz, Le Moyne, and other farms, which were widely known at the time of the oil excitement for their many producing wells.

On the border of Greene County, in the extreme southwest corner of the quadrangle, lies a small oil field, only partially within the area, which is generally known as the Fonner field though sometimes as the Dunn Station field. Portions of this field lie in the Waynesburg, Rogersville, and Claysville quadrangles.

Near the center of Somerset Township small quantities of oil have been produced by a number of wells, and it has been struck in a few wells in West Bethlehem and North and South Franklin townships. A short distance off the quadrangle, northeast of Linden, a new oil field is now being developed.

The principal and only large gas field in the quadrangle is the Zollarsville field, which contains about 70 wells, located mostly in West Bethlehem Township and the borough of Deemston. It has a length of 5 miles and a breadth of about 2 miles. In the Waynesburg quadrangle, south of Zollarsville, there are a few wells in this same belt.

In general, producing gas wells are much more scattering than oil wells and are spread widely over the area. To a few wells in the central part of Amwell Township, between Hackneys and Lone Pine, the name Amity field is often applied. Along this same line to the northeast a small group is encountered west of Odell, in West Bethlehem Township (Ross field), and in central Somerset Township are a number of good gas wells which will be referred to as the Somerset field. Another group, the southward extension of the Cannonsburg field, lies in Chartiers and western North Strabane townships near the quadrangle line. Gas has been found in a number of wells scattered throughout the Washington oil field and in its northern extension near Linden. To the group in this vicinity the term Linden field has been applied.

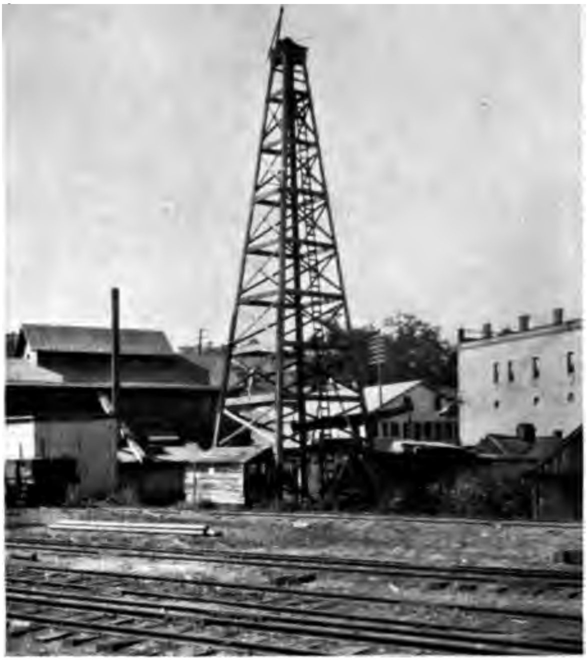
BRIEF HISTORY OF DEVELOPMENT IN WASHINGTON COUNTY.[a]

EARLY HISTORY.

The earliest known drilling for oil or gas in Washington County was by the Washington County Eureka Oil Company, organized in

---

[a] For much of the information contained here the writer is indebted to the staff of the Washington Daily Reporter, who allowed the consultation of its files. Other facts are taken from the Handbook of Petroleum, Derrick Publishing Company, Oil City, 1898.



A. GANTZ WELL, AT WASHINGTON.

First well to produce oil from the Gantz sand.

B. PRESENT APPEARANCE OF OIL OPERATIONS ON WILLETTS FARM, WASHINGTON FIELD

1861. A shallow well was sunk on the Mannon farm, at West Amity station, on the Waynesburg and Washington Railroad. This well was drilled to a depth of 900 feet and abandoned. About the same time several wells were drilled by other companies at Prosperity, Lone Pine, and in South Strabane Township, but all the workings were abandoned. The Morgan Oil Company came into the region in 1880 and drilled its first wells on the Alexander McGuigan farm, in South Strabane Township. In the second well, at 2,247 feet, the largest flow of gas in the world was struck. It was allowed to go to waste in the air for more than a year before a 6-inch main was finally laid to Pittsburg. At the close of 1885 about five wells had been drilled in the Canonsburg field. By November 1, 1886, 17 wells in that field were supplying gas to Pittsburg.

WASHINGTON FIELD.

March 18, 1884, the People's Light and Heat Company was organized. It commenced drilling on the Hess farm, 1 mile from Washington, in the Claysville quadrangle, and April 30 struck an excellent flow of gas at a depth of 2,068 feet. A few months later another big well was struck on the Harvey property. For some time these two wells supplied the town of Washington with gas.

Later in the year the Citizens Natural Gas Company was organized, and commenced a well on the Gantz mill property, opposite the Chestnut street station of the Pennsylvania lines in Washington. Instead of striking gas, the drill penetrated a sand at 2,191 feet which produced oil. This was December 31, 1884. The Gantz well was the first producing oil well in the county (Pl. IV, *A*), and the producing sand came therefore to be known as the Gantz sand. The Gantz well made two flows, one in January and one in February, 1885, but after this the well was only a "pumper." For some time it was closed down, but was later drilled to the Gordon sand.

Immediately on the circulation of the news that oil had been discovered at Washington great excitement arose among persons interested in oil. The town was at once invaded by a large number of oil experts and other persons, and within three months 21 wells were underway in various parts of the county. Some of these were drilled for gas. In April, 1885, a well was started by the People's Light and Heat Company on the Gordon farm, on the edge of the Claysville quadrangle, north of Washington, and August 22 a sand was encountered at 2,392 feet, from which the oil gushed at a rate of 25 barrels per hour. At that time the Gordon well was the deepest producing oil well in the world, and the sand was called the Gordon sand. Later in the year this well averaged 104 barrels per day for thirty-nine successive days.

With the news that oil had been struck in the Gordon, drilling began in earnest. Other prominent wells in 1885 were the McNary gas well and the Gordon No. 2. The production of oil in Washington County in that year was 10,500 barrels. January 6, 1886, a well was finished on the Smith farm, which proved to be a gusher with a production of 1,500 barrels per day. March 11, a big pool of oil was struck by a well on the Manifold farm, at a depth of 1,425 feet. This was a peculiar well, as the oil was found in the "Big Injun" sand, several hundred feet nearer the surface than any other strike of oil in the county. The production the first day was estimated at about 700 barrels. The Manifold No. 2 and Willetts No. 11 wells later obtained oil from the same sand.

In April, 1886, the Thayer well came in with 2,000 barrels of oil per day. At the close of May the field contained 16 producing wells and the production was 4,000 barrels per day. In June it had risen to 10,120 barrels. The maximum was in October, when the production amounted to 17,549 barrels per day. After this it declined. The discovery of oil in this field brought the price of petroleum from $1, about a year before, down to 60 cents a barrel at the end of October. Two enormous wells were the Barre 1 and Cameron 1, both in South Strabane Township. The Cameron 1, finished in May, was probably the largest producer in the field. When at its best it yielded from 140 to 175 barrels per hour. In November of the same year it was still producing about 25 barrels per day. Another great producer was the Stewart well. August 17, 1886, this well produced 2,558 barrels. According to the Washington Reporter, the number of producing wells up to September 13, 1886, was 61; and, the average cost of a single well being taken as $8,000, the total cost of the producing wells would be $488,000. There were 25 dry holes in the field, which, with the average cost of each at $7,000, would amount to $175,000. The amount paid in bonuses and purchases was $466,000 and the estimated running expenses $75,000. The total estimated cost was $1,184,700.

For a few years Washington was a great oil camp. Hundreds of wells were drilled in the southern, western, and eastern parts of the town and in the area extending to the northeast as far as Linden. New producers became frequent and the excitement was intense. Nearly all the successful wells were oil wells, though the field has contained a few scattering gas wells. As usual in the rich fields, the greatest production was confined to a very few farms, some of which contained from 10 to 30 wells apiece. Most of these had a rather short life, and the number of producing wells has since steadily decreased until, at the present date, only a few derricks are standing as a reminder of the productiveness of over a decade ago (Pl. IV, *B*). Many of the rich farms have been completely exhausted. In general the sites of the wells have been plowed over or grown up to grass, but in some cases a pile of débris, the remains of a bull wheel, or a wooden conductor mark the site.

Few wells have been drilled in this part of the field in several years. One or two have recently been drilled to the fifth sand and produce oil from it. In the region southwest of Washington, however, development is still going on. At Meadowlands, in the valley of Chartiers Creek, a pumping station of the Southwest Pennsylvania Pipe Lines is located, and in this valley, between Meadowlands and Houston, are situated about 50 tanks, with an average capacity of 29,350 barrels, in which oil of the southwest district is stored.

The prosperous growth of the town of Washington was largely due to the influx of oil men during the boom and to the productiveness of neighboring farms. Large amounts have been paid in leases to landowners throughout the country. In consequence, many of the farms have a very prosperous appearance and in East Washington handsome residences have been built. Many families, who became well to do at the time of the oil boom, still reside in the town, and a few former operators are now interested in oil fields in other districts.

FONNER FIELD.

Oil was discovered in this field in March, 1897, in a well drilled on the farm of William Fonner. The first well produced 1,800 barrels per day for a short time and then the production declined. A number of wells were drilled in 1898-99 to the Gantz and Fifty-foot sands, which yield the oil.

A number of dry holes were struck in territory immediately adjoining productive wells. In February, 1903, there were 10 wells in the Fonner field, with a daily production of about 50 barrels. The oil is pumped into small tanks and transported by the Southwest Pennsylvania Pipe Lines to the Meadowlands storage tanks.

ZOLLARSVILLE FIELD.

Except in the Fonner field, little drilling for oil has been done in the quadrangle since the eighties, but there has been much prospecting for gas. The largest producing gas field is in the southeastern part of the quadrangle, between Beallsville, Zollarsville, and Deemston. This field contains about 70 wells, and in it new wells are still being drilled. It is operated by the Manufacturers Light and Heat, the Monongahela Gas, the Carnegie, and the Philadelphia companies. In 1904 oil was struck in one or two wells on the western edge of the field.

OIL AND GAS ROCKS.

DESCRIPTION OF THE MAP.

On the geologic map (Pl. I, pocket) three classes of wells are represented, printed in green, red, and black, respectively. Those shown in green are wells which at some time have produced oil; those in red have produced gas; and those in black were either dry or the product has not been reported. Persons familiar with the region will observe that in the Washington field and in general over the northern and western portions of the quadrangle the data are very incomplete; many wells are omitted, and in others the product is not known. The wells shown on the map include only those of which the exact positions were noted by the geologists in the field, no attempt being made to give any of which the location is doubtful. In portions of the Washington field the wells are bunched so close together that their representation on the general map is impossible. In this field, therefore, only those wells are mapped of which the records have been obtained and published in this report. The remaining wells and those not accurately located are omitted, but the approximate limits of the oil fields are represented on the map by the green shading.

DEPTH OF WELLS.

In the Washington field the wells are only 2,200 to 2,900 feet deep, and this is about the average throughout the quadrangle. In the Zollarsville field the depth is somewhat greater, averaging 2,700 to 3,100 feet. The deepest section in the quadrangle is that of the Mrs. A. L. Hawkins No. 1 well (31) in the borough of Deemston. This well extends 3,611 feet below the surface, or over 3,100 feet below the lowest exposed horizon in the quadrangle.

MODE OF OCCURRENCE OF OIL AND GAS.

The three requisites for the occurrence of oil and gas are, first, a sufficient supply from some source; second, a bed of porous rock in which the oil and gas can accumulate; and third, suitable impervious confining beds—clays or shales—to prevent the escape of the oil and gas into surrounding strata.

OIL AND GAS SANDS.

Drillers' names.—In western Pennsylvania all the oil and gas yet discovered have been produced from beds of sandstone, or "sands," as they are called. The various sands penetrated by the drill have been given common or fanciful names by the drillers, and these names have come into common usage as descriptive of the various beds. Their relations are shown in the following table, which gives the driller's name, the depth above or below the Pittsburg coal, and the geologic formation to which the sand belongs.

Drillers' terms for oil and gas rocks, etc., and their geologic correlations.

[+ indicates above Pittsburg coal; − indicates below Pittsburg coal.]

Formation.	Drillers' name.	Geologists' name.	Approximate maximum thickness in this area.	Average interval to top of bed from Pittsburg coal	Correlation with sands in neighboring fields.
			Feet.	*Feet.*	
Washington	Bluff sand	Waynesburg sandstone.	60	+ 390	
Monongahela	Waynesburg or Pinhook coal.	Waynesburg coal	5	+ 330	
	Mapletown coal	Sewickley coal	6	+ 110	
	Pittsburg coal	Pittsburg coal	10	0	
Conemaugh	Murphy	Morgantown sandstone	100	− 200	
	Little Dunkard sand.	Saltsburg sandstone.	30	− 370	
	Big Dunkard sand.	Mahoning sandstone.	100	− 500	Hurry-up sand.
Allegheny	Connellsville coal	Upper Freeport coal.	6	− 600	
	Gas sand	Kittanning or Clarion sandstone.	70	− 800	
Pottsville	Salt sand	Pottsville sandstone (Homewood + Connoquenessing).	180	− 900	
Mauch Chunk	Red rock	Mauch Chunk red shale.	100	−1,050	
	Big lime	Greenbrier limestone.	60	−1,150	
Pocono	Big Injun or Manifold sand	Burgoon sandstone	300	−1,200	Mountain sand.
	Squaw sand		130	−1,530	
	Thirty-foot sand		170	−1,750	Berea or Butler County gas sand.
	Gantz sand		60	−1,900	First sand Hundred-foot sand.
	Fifty-foot sand		100	−1,950	
Chemung	Nineveh Thirty-foot sand.		30	−2,050	Second sand.
	Gordon Stray sand		30	−2,100	Gray or bowlder sand.
	Gordon sand		50	−2,130	Third sand.
	Fourth sand		50	2,200	
	Fifth sand		50	2,300	McDonald sand.
	Bayard or Sixth sand.		50	2,400	
	Elizabeth sand		20	2,500	
			30	2,700	Warren First sand.
				2,750	Warren Second sand.

Murphy sand.—The uppermost sand commonly reported by drillers is known in the southeastern part of the quadrangle as the Murphy sand. It occurs in the Conemaugh formation at an interval of 170 to 220 feet below the Pittsburg coal and varies in thickness from 25 to 120 feet. This sand probably corresponds with the Morgantown sandstone, which outcrops at about the same horizon in certain parts of southwestern Pennsylvania and northern West Virginia. It is not productive of gas or oil.

Dunkard sand.—This is the name given to a sand or group of sands occurring in the Conemaugh formation 480 to 540 feet below the Pittsburg coal and 50 to 100 feet above the Upper Freeport coal.[a] It is frequently recorded as a double sand, in which case the upper and lower divisions are known as Little Dunkard and Big Dunkard, respectively.

The Big Dunkard sand in many places lies almost directly on top of the Upper Freeport coal. It therefore corresponds in position with the Mahoning sandstone, which is one of the most conspicuous sandstone lentils farther north and east in western Pennsylvania. The thickness of the Big Dunkard varies from 30 to 100 feet. Where simply the Dunkard sand is recorded, the Big Dunkard is most commonly referred to, and this is believed to be the more persistent of the two beds. In some cases, however, the sand is thick enough to include both divisions.

The top of the Little Dunkard sand usually occurs at 170 to 240 feet above the Upper Freeport coal, and this sand is therefore considered the equivalent of the Saltsburg sandstone, a lentil which forms a conspicuous surface feature over large areas in the western part of the State. The thickness of the Little Dunkard is generally 20 to 40 feet.

The name of these sands was taken from Dunkard Creek, near the mouth of which an oil pool was discovered in 1861. The Dunkard sand has produced oil in several places, but not in this quadrangle.

Gas sand.—Several sands occur in the Allegheny formation. The principal bed recorded by the drillers is known as the Gas sand and lies near the middle of the formation, 670 to 840 feet below the Pittsburg coal. Although rather variable in position, it generally corresponds, where correctly noted, with the Kittanning sandstone, between the Upper and Lower Kittanning coals. In thickness this sand varies from 15 to 70 feet. A small quantity of gas is occasionally encountered in it.

Salt sand.—The Salt sand corresponds to the Pottsville formation of northern and central Pennsylvania and occurs from 870 to 990 feet below the Pittsburg coal. It varies in thickness from 100 to 170 feet, but generally contains a break of shale near its center. This sand sometimes contains a little gas, but is otherwise unproductive. It is important to the drillers for the reason that it contains a large quantity of salt water.

It should be noted that the Salt sand of this region occurs above the Big Injun, while in Armstrong County the same name is applied to a gas-bearing stratum below the Big Injun.

Big Injun sand.—This is the name given by the drillers to a hard, fine-grained, gray sandstone, which occurs at the top of the Pocono formation, directly below the Big lime. It corresponds with the Burgoon sandstone, which outcrops on the Allegheny Front, and is also known as the Mountain sand. In Washington County the Big Injun is sometimes called the Manifold sand, for the reason that in a well on the Manifold farm (180), near Washington, oil was found in it.

---

[a] Unless otherwise stated, all intervals in this report are from top to top of the respective beds.

The Big Injun sand is everywhere present and can be easily recognized by the drillers. In thickness it varies from 250 to over 350 feet. In many places it contains two or three coarse, porous, and, in some cases, pebbly layers, filled with oil, gas, or salt water. These are what the drillers call "pay" streaks. An interesting feature of the sand is a shaly break, which is frequently encountered about one-third of the distance from the top. This break locally amounts to as much as 20 feet in thickness. It has been recorded especially in the J. L. Thompson wells and in a well in Morris Township.

The interval from the Pittsburg coal to the top of the Big Injun sand varies from 1,115 feet in the Culbertson well at Washington, to 1,292 feet in the Burkehammer well near Deemston. In general, it is greater toward the southeast, owing largely to the increased thickness of the Mauch Chunk in that direction. (See pp. 27, 53.) In the vicinity of Washington and in North and South Strabane townships the interval is usually between 1,130 and 1,160 feet. In several wells in North Franklin Township it is reported as 1,200 to 1,225 feet, but to the south, along the western edge of the quadrangle, it diminishes to about 1,140 to 1,190 feet. One record reports as small an interval as 1,075 feet, but the accuracy of this is doubtful.

In the Zollarsville field a large number of measurements of this interval are at hand, and these show a good agreement. Near Zollarsville it varies only between 1,233 and 1,257 feet; near and west of Deemston between 1,200 and 1,286 feet, and southwest of Beallsville between 1,210 and 1,245 feet. Only a few records from Somerset and Nottingham townships are at hand, but in these the figures are 1,196 feet near Ellsworth, 1,205 feet northeast of Vanceville, 1,217 feet north of Bentleyville, 1,156 feet near Kammerer, 1,188 feet midway between Kammerer and Munntown, and about 1,200 feet near Finleyville.

In general, the Big Injun sand is unproductive, but in several places it has locally produced oil. The most important instance of this kind was in the Manifold No. 1 well, drilled in 1886, on the Manifold farm near Washington. This is one of the most remarkable wells in the Washington field on account of its great yield of oil, its long-continued production, and the lack of interference from neighboring wells. Although located in a district which was thoroughly perforated by holes, none of the neighboring wells harmed it, and in none of them, with two or three exceptions, was oil found at this horizon. Of the other wells which produced oil at this horizon, the most important is the Willetts No. 11 close by. The Manifold well flowed about 700 barrels per day. A little gas is reported from this sand in several wells in West Bethlehem Township and the borough of Deemston.

This sand was named Big Injun by some driller in this county on account of its unusual thickness and hardness.

Squaw sand.—In the northern and eastern portions of the quadrangle a sand commonly occurs 20 to 50 feet below the bottom of the Big Injun. This is known to drillers as the Squaw sand. In many places it is over 100 feet thick, and in the J. L. Thompson wells it reaches 130 feet, but it is irregular and often missing. In the Rogersville quadrangle it has not been recognized.

Thirty-foot sand.—This sand occurs below the Squaw and 450 to 650 feet below the top of the Big Injun sand. The name Thirty-foot means nothing as regards its thickness, for it varies from a knife edge up to 170 feet. The sand is not uniformly present and occurs rather irregularly; but is believed to correspond approximately in its upper and lower limits to the Berea sand of the Burgettstown and Beaver regions, to the Butler gas sand of northern Pennsylvania, and to the Berea grit of Ohio.

The interval from the Pittsburg coal to the top of this sand varies from 1,560 to 1,865 feet. In South Strabane Township the known limits are between 1,560 and 1,630 feet; in the southwest corner of the quadrangle 1,750 and 1,770 feet. In the immediate vicinity of Zollarsville the sand is not recorded, but near Deemston the limiting figures are 1,810 and 1,865 feet. Several wells in this vicinity exhibit a much smaller interval—only 1,720 to 1,740 feet—this being due to a local thickening of the sand. Southwest of Beallsville the interval is usually 1,800 to 1,855 feet, but it varies irregularly, and some measurements are reported which are considerably less. In the Somerset field 1,805 feet is recorded, and near Finleyville about 1,850 feet. The Thirty-foot sand, so far as known, is not productive anywhere in the quadrangle.

The Thirty-foot sand of Washington is not the same as the Thirty-foot of Armstrong County, but probably corresponds closely with what is there known as the Gas, Butler, or Murrysville sand.

Gantz sand.—Next below the Thirty-foot sand is the Gantz, which was named from the farm near Washington on which oil was first produced from this sand. This was the first producing oil well in the county.

The Gantz sand ranges from 60 to 160 feet below the top of the Thirty-foot sand and is a short distance above the Fifty-foot sand. It varies in thickness from 10 to 60 feet. In some wells the Gantz thickens up enough to unite with the Fifty-foot, and in such cases the combined sand is known as the Hundred-foot and is the equivalent of the Hundred-foot sand of Beaver, Butler, and Armstrong counties. It is supposed also to be the same as the First sand of Oil Creek.

The interval from the Gantz sand to the Pittsburg coal seems to be more variable than that of any other persistent sand. Within the quadrangle it varies from 1,790 feet in the Ross well in Chartiers Township to 1,985 feet in one of the J. L. Thompson wells in the Zollarsville field. As with the upper sands, there is a gradual thickening of the interval from northwest to southeast, as shown by figures in the various districts. In Chartiers Township the variation is from 1,790 to 1,821 feet; at Washington, 1,805 to 1,827 feet; in North and South Strabane townships, 1,815 to 1,870; in North and South Franklin townships, 1,820 to 1,880; in the northwestern part of West Bethlehem Township, 1,877 to 1,883; in the Fonner field and vicinity, 1,900 to 1,929; near Zollarsville, 1,890 to 1,955; west of Deemston, 1,910 to 1,985, with two wells as low as 1,820 and 1,845; at Deemston and farther east, 1,910 to 1,970; southwest of Beallsville, 1,886 to 1,933; south of Ellsworth, 1,910; northeast of Vanceville, 1,940;

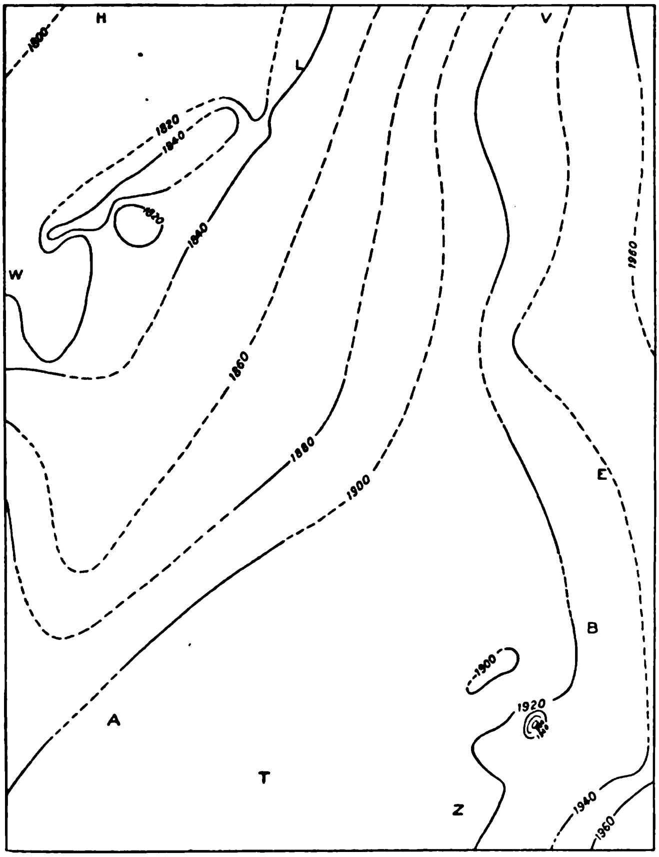


FIG. 3.—Sketch map showing the diminution of interval between the Pittsburg coal and the Gantz sand, corresponding to the unconformity at the top of the Mauch Chunk formation. A, Amity; B, Beallsville; E, Ellsworth; H, Houston; L, Linden; T, Tenmile; V, Venetia; W, Washington; Z, Zollarsville.

near Kammerer, 1,907; southeast of Munntown, 1,925; and at Finleyville, about 1,967 feet. This progressive thickening of the interval toward the south and east is shown by isochore lines in fig. 3, as interpolated from well records. At all points along a given line in this figure the interval from the coal to the Gantz sand is equal, and it thickens or diminishes 20 feet for each line.

The interval from the top of the Big Injun sand to the top of the Gantz varies from 574 to 751 feet, the extremes being, respectively, the well on the Harding lot at Washington and the Gamble well near Kammerer. In single instances considerably greater intervals have been observed, but these are believed to be due either to poor records or to a mistaken correlation of the sands. In North and South Strabane townships the interval varies from 675 to 710 feet; in the borough of Washington, 574 to 670 feet; in the Fonner field, 719 to 748; near Zollarsville, 650 to 722; in the vicinity of Deemston, 630 to 720; and southwest of Beallsville, 650 to 700 feet. In a comparison of these groups of measurements the most noticeable feature is that, unlike the intervals from the coal, they do not show any general thickening toward the southeast. This fact is in harmony with the view that the thickening of the strata is due principally to an unconformity at the top of the Mauch Chunk formation.

The Gantz sand has probably furnished a greater number of producing wells than any other sand in the county. The great majority of the wells in the Washington field obtained their oil from it. In some places the sand has two or three "pay" streaks a few feet apart. An immense quantity of oil has been produced from the Gantz, some of the early gushers having flowed hundreds of barrels the first day. In several cases the production the first twenty-four hours reached 2,000 to 3,000 barrels.

The Gantz sand is also the principal producing sand of the Fonner field, where it furnishes both oil and gas. In this part of the quadrangle, however, the Gantz and Fifty-foot are frequently found in contact, forming the Hundred-foot. The Gantz sand also produces gas in a few wells in the Zollarsville and Somerset fields, and it is the principal gas sand of Chartiers Township in this quadrangle.

Fifty-foot sand.—This is the lower division of the Hundred-foot and has a wide distribution in the Amity quadrangle. Under this name drillers often include the Gantz in wells where the two sands are combined. The Fifty-foot sand itself locally splits into two sands. Its distance from the bottom of the Gantz sand varies up to 80 feet, being greatest toward the southeast. Where distinct from the Gantz, the sand is here and there as much as 100 feet thick, though generally thinner.

The distance from the Pittsburg coal to the Fifty-foot sand varies from 1,807 feet in the Matthew Linn well at Washington to 2,057 feet in the Burkehammer well in the borough of Deemston. This interval in the Washington field, including North and South Strabane townships and the borough of Washington, varies from 1,817 to 1,930 feet; in the Amity and Fonner fields, from 1,905 to 1,941 feet; in the Zollarsville field, from 1,940 to 2,057 feet. The bottom of the Fifty-foot sand is usually not over 50 feet above the top of the group of red shales which are considered the Catskill beds at the top of the Devonian system. This sand is therefore considered as most probably the lowest sand in the Carboniferous system. (See discussion on p. 28.)

The distribution of oil and gas in the Fifty-foot sand shows a fair agreement with their occurrence in the Gantz, as would naturally be the case where two sands in close association are in places combined. In the Washington field the Fifty-foot sand has furnished many good wells, including some of the great producers. Many of the wells which found oil in both the Gantz and Fifty-foot obtained the greater proportion from the lower of the two sands. The Fonner field has also furnished oil wells from this sand. In this field the Fifty-foot and Gantz sands are generally united.

The Fifty-foot sand has not yet produced a great amount of gas, but in Somerset Township several wells have obtained gas in this sand and it has occasionally been found at this horizon in the Zollarsville field. In the Washington field a large proportion of the oil wells, including most of the enormous producers, have long since ceased to be productive and have been abandoned.

Gordon Stray sand.—Above the Gordon sand and near the top of the red beds a sand is sometimes reported by the name of Gordon Stray. Sands at about this horizon are also frequently called Butler Thirty-foot, Nineveh Thirty-foot, or simply Thirty-foot or Stray. There is considerable doubt whether this horizon should properly be included in the Chemung formation or in the Pocono, but as in a few cases thin red shales have been reported just above it, the Gordon Stray sand is here considered one of the lentils in the Catskill member of the Chemung.

Although not classed as one of the productive sands, the Gordon Stray is frequently known to produce gas, and in the borough of Washington gas has from time to time been found in it. One of these gas wells was that of Matthew Linn, in which the rock pressure amounted to over 600 pounds per square inch.

Gordon sand.—In the vicinity of Washington this is one of the principal oil sands, and occurs near the top of the Venango oil group and of the Third sand horizon of Oil Creek. The name "Gordon" originated from the Gordon farm near Washington, where the sand was first pierced by the drill in August, 1885. In the Gantz well this sand occurs 245 feet below the top of the Gantz sand, and in other wells in that vicinity the interval varies from 240 to 300 feet. It is usually about the first conspicuous sand below the top of the Catskill red beds. The usual position of the Gordon sand is shown by the Kountz No. 1 well (174) in South Strabane Township. The sand, which is here designated Gordon, was noted by the driller as the "Stray sand," but, to judge from the intervals, this was a mistake.

Partial section of Kountz No. 1 well, South Strabane Township.

		Feet.
Sand, Gantz	Pocono?	104
Slate		81
Red rock	Catskill	10
Sand and slate		10
Slate		16
Sand (Gordon)		60
Slate		19
Sand		20
Slate		3
		323

In the Fonner field, just off the southwest corner of the quadrangle, the William Fonner No. 2 well gives a section which shows a similar relation of beds.

Partial section of William Fonner No. 2 well, Morris Township, Greene County.

		Feet.
Sand, Gantz	Pocono?	29
Slate		2
Sand, Fifty-foot		35
Slate, black		11
Sand, red	Catskill	15
Slate		53
Red rock		5
Sand shells, gray		15
Pencil cave[a]		5
Sand, Gordon		50
Slate, black		80
Sand and shells		35
		335

The thickness of the Gordon sand varies from 10 to 50 feet. At Washington and in South Strabane Township it seems to be fairly persistent and has probably been always correctly identified by the drillers. In other parts of the quadrangle, however, its persistency is not so certain. In North Strabane Township it is rarely reported, except in the vicinity of Linden. In the southeast corner of the quadrangle it is frequently recorded, but is just as often missing and is very irregular. Where recorded in this region it sometimes apparently includes the Fourth sand.

The interval from the Pittsburg coal to the Gordon sand in South Strabane Township and Washington varies from 2,051 to 2,125 feet;

---

[a] The usual "pencil cave" horizon of the drillers occurs in the Mauch Chunk formation several hundred feet nearer the surface.

in Chartiers Township it runs 2,029 to 2,078; in the vicinity of Linden 2,077 to 2,129; in North Franklin, according to the few available records, it is fairly constant at 2,070 to 2,078 feet; at Sunset it is 2,123 feet; in the Fonner field the variation is from 2,080 to 2,095 feet; in the Zollarsville field, from 2,110 to 2,240, with occasional reports as low as 2,047 and 1,979; and southwest of Kammerer the amount is 2,160 feet.

The Gordon sand has locally furnished both oil and gas, but it can not be ranked as one of the principal producers. The original flow of oil from the Gordon well was 25 barrels per hour. As stated above, it is improbable that the Gordon sand is in reality one continuous bed beneath the whole quadrangle.

Fourth sand.—Where present, this sand is dovetailed into the Catskill beds, about 40 to 140 feet below the top of the Gordon. Like the Gordon, it is irregular, and probably not persistent as a definite bed. In thickness it varies from 10 to 50 feet. The distance from the Pittsburg coal is as follows: In South Strabane Township, 2,101 to 2,135 feet; in the vicinity of Linden, 2,138 to 2,160; at Washington, 2,130 to 2,163; in North Franklin Township, 2,121 to 2,165; in the Ross field, 2,102 to 2,130; in the Zollarsville field, 2,211 to 2,350 feet.

In only a few instances has this sand produced gas. The sand has been noted no more frequently than the Gordon, which indicates something of its nonpersistence and variability.

Fifth sand.—The Fifth sand is also within the limits of the Catskill beds; but it seems to be more persistent than either the Stray, Gordon, or Fourth. In general it occurs near the lower limit of the Catskill and in some places has no red shale below it. In one well the Fifth is reported as a "red sand." The position of the sand is 250 to 400 feet below the top of the Gantz, and it is reported in nearly all wells which are deep enough to reach it. In a considerable number of records in the borough of Deemston and in East Bethlehem Township, however, no Fifth sand is mentioned. This sand varies in thickness from 10 to 50 feet.

The interval below the Pittsburg coal varies in North Strabane Township from 2,186 to 2,220 feet; in South Strabane, 2,175 to 2,280; at Washington, 2,174 to 2,201; in North Franklin, 2,181 to 2,207; in South Franklin, 2,208; in the Ross field, 2,180 to 2,181; 2 miles northeast of Lone Pine, 2,205; in the vicinity of Zollarsville, 2,352 to 2,409; west of Deemston, 2,272 to 2,371; near Deemston, 2,327 to 2,359; southwest of Beallsville, 2,272 to 2,336; and north of Bentleyville, 2,300 feet.

With the exception of the Bayard and Elizabeth sands, the Fifth has been one of the most important gas-producing sands of the quadrangle, but most of the wells obtaining gas from it are now abandoned. They were situated in the northern extension of the Washington oil field in the vicinity of Linden and west of Gambles station. A number of these wells north of Linden occur in the syncline. Just outside of the borough of Washington the Morgan No. 11 well, drilled in 1900, has produced oil from this horizon. In North and South Franklin townships the sand has given a little oil in several wells. Some gas has been produced from this horizon in the Zollarsville and Somerset fields.

Bayard sand.—In the western and northwestern parts of the quadrangle the wells are in general not deep enough to reach the Bayard sand, and nothing is known of it. In Morris Township several wells pass into the Elizabeth without reporting the Bayard, and as few of the deep wells in the Rogersville quadrangle note this sand it may die out in that direction. It is reported in one well in North Franklin Township. In the Deemston field and vicinity a great many wells penetrate the Bayard, which is usually reported 50 to 150 feet below the top of the Fifth. Owing to its position it is frequently called the Sixth sand, but this name has also been applied to the Elizabeth. In thickness it averages about 20 or 30 feet, here and there amounting to as much as 50 feet.

The Bayard sand is reported in numerous wells in the Zollarsville field, where the distance below the Pittsburg coal varies from 2,337 to 2,479 feet. In a well southeast of Munntown it is 2,400 feet, and in North Franklin Township 2,231 feet.

A large part of the gas produced in the Zollarsville field comes from the Bayard sand. In other sections the sand is not important, although beneath a large proportion of the quadrangle it has never yet been penetrated.

Elizabeth sand.—The deepest sand which has yet proved of any importance is the Elizabeth, which lies 50 to 150 feet below the top of the Bayard. It is also sometimes known as the Sixth sand, though this name is more often applied to the Bayard. In general the Elizabeth is supposed to be more persistent than the Bayard, being reported in nearly every well which reaches its horizon. It is, however, one of the thinnest of the sands, rarely exceeding 20 feet, and usually considerably less. In the Waynesburg quadrangle to the south it is not known to exceed 7 feet.

Notwithstanding its great depth, this sand has been penetrated by many wells in the Zollarsville field, where its distance below the coal ranges from 2,470 to 2,530 feet. By comparison with the measurements given for the Bayard sand it will be noticed that the Elizabeth is much more constant. One measurement of 2,588 feet is reported, but this is an exception. The interval is 2,482 feet in a well north of Bentleyville, 2,506 at Lone Pine, and 2,400 in the Fonner field.

In the Zollarsville field the interval from the Elizabeth to the top of the Gantz sand is 528 to 620 feet, with occasional records as high as 743. The excessive amounts are generally due to indefiniteness in the position of the top of the Gantz sand. In the Fonner field this interval is 500 feet and at Lone Pine 600 feet.

The Elizabeth sand is at present the great gas producer of the Zollarsville field. Gas has also been obtained from it in Somerset Township. Beneath the greater part of the Amity quadrangle this sand has never been penetrated, but it would seem to offer good opportunities for future prospecting. Oil and gas are reported to occur in this sand in one well in North Franklin Township.

Beds below the Elizabeth sand.—In general, the Elizabeth sand may be considered the bottom of the geologic record, but a few wells in the quadrangle have reached greater depths. The Mrs. A. L. Hawkins No. 3 (32), in the borough of Deemston, reports a "Sweet sand" 40 feet below the top of the Elizabeth. The recorded thickness is only 4 feet. In the H. H. Richards No. 1 well (293), in West Bethlehem Township, this sand has the same thickness and occurs 69 feet below the top of the Elizabeth. A number of wells penetrate this horizon without reporting the sand. In the George Thompson No. 1 (309), in West Pike Run Township, a sand 30 feet thick was noted 290 feet below the top of the Bayard, and 101 feet lower the bottom of a bed of "broken shells and slate" is recorded. These beds have not been definitely correlated, but are believed to approach the horizon of the Warren First and Second sands of northern Pennsylvania. In the Mrs. A. L. Hawkins No. 1 well, near Beallsville, beds of a different character occur. Nothing is recorded there in the interval of 747 feet below the top of the Fifty-foot sand, but at that depth—2,264 feet below the Pittsburg coal—there are 48 feet of "sand and lime." Below that the record gives only 474 feet of "slate and shell." This record was evidently considerably generalized by the driller. In only one instance, in the southern part of the Zollarsville field, is gas known to occur below the Elizabeth sand.

PRODUCTION OF OIL AND GAS.

WASHINGTON OIL FIELD.

The principal production of oil in the Washington field was in the years immediately following its discovery in 1885. Throughout the history of the field oil has been obtained mostly from the Gantz and Fifty-foot sands, and all the gushers were from these sands. In the early days the flows from some of the big wells were enormous. Among the noted wells were the William Barre Nos. 1 and 3; William Davis Nos. 1, 2, 3, and 4; Morgan Nos. 5 and 9; Matthew Taylor Nos. 1, 2, 3, and 4; Workman Nos. 1 and 2; the Gordon well; A. M. Smith Nos. 1 and 3; Manifold; Taylor; Willetts Nos. 1, 3, and 5; Munce No.

11; and Cameron No. 1, all of which flowed over 100 barrels in the first twenty-four hours.

Of these, the Davis No. 2 produced 2,200 barrels per day; the Davis No. 4, 1,500 barrels during the first twenty-four hours; the A. M. Smith No. 3, 2,800 barrels, and the Matthew Taylor No. 3, 2,300 barrels in the same length of time. The largest well in the field was the Cameron No. 1, which at first produced 50 barrels per day, but after a few days reached 140 to 175 barrels per hour. May 31, 1886, the field contained 16 producing wells, the list of which, according to the Washington Reporter, is as follows:

List of producing wells in Washington field May 31, 1886.

Well.	Owner.	Production per day.
		Barrels.
McGovern	Union Oil Co	28
Taylor	do	722
Lead works	Mulholland, McKeever & Co	12
Do	Caldwell & Marsh	18
Gantz	Citizens Oil and Gas Co	25
Weaver	do	10
Montgomery	M. S. Kinney Bros	7
Gordon, No. 1	People's Light and Heat Co	90
Gordon, No. 2	do	8
Gordon, No 4	do	275
Hess, No. 2	do	40
Munce Purchase, No. 1	I. Willetts	150
Munce Purchase, No 3	do	725
Munce Purchase, No 5	do	200
Smith, No 1	Belmont Oil Co	536
Cameron, No. 1	do	2,424

Some of the wells, including those on the Davis, Willetts, and neighboring farms, have maintained their production wonderfully, and these farms still have several producing wells. After fifteen years the William Smith No. 3 produced 7 barrels per day. The production of the Washington field for 1887 was estimated at 2,859,344 barrels, or 7,800 barrels per day. For 1888 it was 2,322,189.73 barrels. Most of the old wells have, however, run dry and have been abandoned, and those still existing are gradually disappearing.

Besides the Gantz and Fifty-foot sands the Gordon has yielded oil in a few wells in the Washington field and the Fifth sand in several. The deeper sands have not yet been prospected, but they would seem to offer a field worth testing. As explained on page 51, the Big Injun sand proved productive in the Manifold and Willetts No. 11 wells—hence the name Manifold sand. The pocket of oil in that sand was, however, a very local one.

One characteristic of the Washington field is that it was worked by a great number of small operators. At the time the excitement was at its height, the Washington Reporter published a list of 125 wells and their owners, in which over 40 different companies and individuals were represented. The more extensive operations were carried on by the Forest Oil Company, People's Light and Heat Company, Willetts Oil Company, Associated Producers Company, Manufacturers Light and Heat Company, Chartiers Oil Company, John McKeown, Pew & Emerson, and the Belmont Oil Company.

In the vicinity of Meadowlands there are about 50 oil tanks, having an average capacity of about 29,350 barrels each, a total of 1,467,000 barrels, in which the oil produced in the southwest Pennsylvania district is stored. The total tankage at Meadowlands at one time was about 2,409,000 barrels, contained in 76 tanks.

A number of wells in the Washington field have produced gas in considerable quantities.

FONNER OIL FIELD.

The Fonner is a small field which now produces about 50 barrels of oil per day, from the Gantz and Fifty-foot sands. Some gas is also produced in this field. The operations are carried on by the South Penn Oil Company.

ZOLLARSVILLE GAS FIELD.

This is the great gas field of the quadrangle and has had a large production for the past few years. The yield is principally from the Elizabeth and Bayard sands, though small quantities are found at all the important sand horizons. This field is being operated by the Monongahela Natural Gas Company, the Philadelphia Company, the Carnegie Natural Gas Company, the Greensboro Natural Gas Company, and the Manufacturers Light and Heat Company.

On the extreme western edge of the field several small oil wells were tapped in 1904. One of these, on the Margaret Hill farm (278), flowed 65 to 75 barrels per day.

MISCELLANEOUS WELLS.

A number of miscellaneous wells in various parts of the quadrangle have encountered oil in small quantities. None of them are worth mentioning. Gas wells are more widely distributed, and some of the scattered wells are good producers. One of the more continuous belts of wells runs from the Fonner field northeastward along the Amity anticline to beyond the National pike. Another group occurs in central Somerset Township. The gas in these scattering wells occurs at no particular horizon, but has been found in all sands from the Big Injun down to the Stray below the Elizabeth. The most commonly productive sands are, however, the Gantz, Fifty-foot, Fourth, and Fifth. The majority of the scattering wells were drilled by the Carnegie Natural Gas Company, the Philadelphia Company, and the Manufacturers Light and Heat Company.

PRESSURE OF NATURAL GAS.

The original pressure of gas in the Washington County district was about 500 pounds to the square inch, minute pressure. Since its discovery every gas field in the State has exhibited a constantly diminishing pressure. The pressure is different for the different sands and also varies for a given sand in various parts of the field. Few pressure records are available for publication.

THEORY OF OIL AND GAS.

Early in the history of oil and gas development attempts were made to discover some means of predicting their occurrence. Since 1859 various geologists and others have published papers attempting to solve this problem. Among others T. Sterry Hunt (1859 and 1863), E. B. Andrews (1861), and H. Hoefer (1876) long ago recognized certain general relations of oil and gas pools to the anticlinal structure of the region. It remained for I. C. White and Edward Orton to bring the occurrence before the public in such a way as to force a measure of belief in the theory which they advanced.

THE "ANTICLINAL THEORY."

In an article on the geology of natural gas, published in 1885,[a] White first formulated the "anticlinal theory," in which he showed that nearly all the great gas wells and pools are situated near the crests of anticlinal folds; while wells bored in the synclines on one side or the other of the anticlines more often obtained little or no gas but in many cases large quantities of salt water. In 1892 the same writer published a paper,[b] in which he extended the theory to include the occurrence of oil as well as gas, and stated how he had located the Washington, Mannington, and other large fields by means of the principles involved in the theory.

The view is, in brief, that when the rocks are gently tilted the oil, gas, and salt water contained in them are caused to separate out in the order of their densities; water (if present) in the synclines, oil next above, and gas nearest the crests of the anticlines. In western Pennsylvania and northern West Virginia these accumulations take the form of belts approximately parallel with the axes, in a general northeast-southwest direction. White states various apparent exceptions, but in reality modifications, of the theory, due to the nonparallelism of surface beds with the oil and gas rocks, etc.

Considerable has been written, pro and con, about this theory by various geologists and others, and some have seriously doubted whether it is true. By most geologists the theory is now accepted, not, however, as absolute in its limitation of the occurrence of oil and gas, but as explaining their occurrence to a considerable extent. The distribution of the pools is dependent also on the presence or absence of water in a given region or a given sand; on the continuity and shape of the anticlines, whether they are ascending or plunging in a given direction; on the porosity of the oil rock, its capacity to hold oil, the directions of its variation, etc.

---

[a] Science, June 26, 1885. White gives credit to W. A. Earseman, an operator of Pittsburg, who had previously noted the relations of oil and gas to geologic structure.

[b] The Mannington oil field and the history of its development: Bull. Geol. Soc. America, vol. 3, 1892, pp. 187-216; reprinted in part in West Virginia Geol. Survey, vol. 1 (a), Oil and gas, 1904, pp. 54-59.

APPLICATION OF ANTICLINAL THEORY IN PENNSYLVANIA.

Thus far the Pennsylvania folios[a] which have been published show a certain degree of correspondence of distribution of these deposits to geologic structure. The gas fields occur generally on the anticlines; the oil fields part way down the slope if water is present, in the bottom of the synclines if water is absent. To take the Pennsylvania and northern West Virginia fields as a group, the evidence at present seems to warrant the following generalizations regarding structural distribution:

(1) When not affected by other conditions, accumulations of oil and gas show a definite relation to the structure of the region.

(2) The greatest elongation of the pools is generally in a direction approximately parallel with the axes of the folds.

(3) Where both oil and gas occur they are distributed according to their densities, the oil in the lower and the gas in the higher portion of a stratum.

(4) When salt water is present oil may occur in that part of the stratum lying directly above the water level.

(5) Oil may occur on the crests of anticlinal folds below water level.

(6) When salt water is absent the occurrence of oil is more irregular and more affected by other conditions; it may occur along the synclinal axes or at many points scattered over the slope.

(7) Oil may occur on a structural slope at points where the dip changes from gentle to steep.

(8) Gas occurs most commonly on the higher portions of the anticlinal arches, above the upper level of the oil.

(9) Gas also occurs in widely scattered localities, owing to small local folds or changes in porosity.

Structure is not the only condition determining the occurrence of gas and oil. The structure may be favorable, yet neither oil nor gas occur. The chief condition other than those given above is the existence of rock of such character as to act as a reservoir.

RELATION OF OIL AND GAS RESERVOIRS IN THE AMITY QUADRANGLE TO GEOLOGIC STRUCTURE.

Washington field.—A study of the geologic map of the Amity quadrangle with reference to the distribution of oil and gas shows certain relations which hold good with respect to the individual fields. The Washington oil field, the most striking example, is located on the eastern flank of the Washington anticline, which it follows in this quadrangle for a distance of 5 miles. The field averages about a mile in width and in position agrees closely with the lower portion of the steepest grade of the anticlinal slope. The greater proportion of wells are grouped in a belt about a mile wide just above a change in grade from the gentle structural slopes of the bottom of the syncline to the steeper slopes of the anticline. Along this belt the dip of the rocks is unusually steep—about 200 feet in a mile. This is the steepest continuous dip in the quadrangle and is greater than usually occurs in Pennsylvania oil fields. It will be noticed that the map shows a nose-like projection from the axis directly east of the Manifold mine, and that a projection of the oil field agrees with this.

---

[a] Geologic Atlas U. S., folios 82, 92, 94, 102, 110, 115, 121, 123, 125, 134.

One small area in the Washington field—the group of wells west of Gambles—shows structural relations somewhat different from those in the rest of the field. This area is near the north end of the Washington field, and here the belt bends to the east and oil occurs down to the bottom of the syncline. As operations in this part of the Washington field ceased long ago, it is difficult to obtain data for drawing conclusions regarding the cause of these peculiar conditions. It is suggested, however, that if the rocks directly below this pool are dry the oil may have descended from farther up the slope, and thus the relations of the field may be accounted for. Another peculiar feature of this field is the presence of a number of gas wells in the bottom of the syncline north of Linden. Such an occurrence is exceptional, as gas is more often present on the anticlines. The gas occurs, however, above the oil, as would be expected.

Examples of the anticlinal tendency of gas.—A typical illustration of the structural relations of natural gas is afforded by the scattered wells lying high up on the Washington anticline in Chartiers and western North Strabane and South Strabane townships, where they occur over a broad arch in the strata. The Canonsburg gas field is a continuation of this belt.

Perhaps the best illustration of the anticlinal tendency of gas is afforded by the Amity anticline, between the Greene County line and Kammerer. This anticline is a rather broad arch having gentle dips at its crest, and along it occur a large number of gas wells.

Zollarsville field. The principal gas field of the quadrangle—the Zollarsville field can not be said to hold any definite structural position. Instead of occurring high up on the anticline southeast of Deemston, as might be expected, it lies on the west flank of the anticline and stretches over nearly the entire synclinal slope between

Beallsville and Zollarsville, a few wells occurring nearly to the center of the basin. The apparent disregard of structure here may perhaps be due to the nonparallelism of the oil sands and the Pittsburg coal, but the data at hand are not sufficient to permit the accurate drawing of contours on any sand. Near the axis of the syncline, southwest of Beallsville, oil has been struck in several wells.

Summary.—The distribution of oil and gas in the quadrangle as a whole can be said to show a fair agreement with the geologic structure. The most favorable location for oil seems to be on the flanks of the anticlines, and for gas either on the broad anticlinal arches or the upper part of the synclinal slopes—always, however, higher up the slope than where oil is found.

ORIGIN OF OIL AND GAS.

The theories for the origin of petroleum and natural gas can be divided into two groups, viz, (1) those which refer these products to inorganic action or chemical affinity in mineral matter, and (2) those which regard them as due to partial decomposition of vegetable and animal matter stored in the rocks. The various modifications of these theories have been discussed in considerable detail by Edward Orton.[a] The theory now most generally accepted by geologists is briefly as follows:

When the Paleozoic rocks were deposited they contained large amounts of carbonaceous matter, the remains of animal and vegetable organisms. This material was present in sufficient quantities to give rise to oil and gas, through the process of decomposition and the physical and chemical changes to which it has been subjected during geologic time. The products may originally have been formed in greater abundance in shales, but when once formed they probably migrated into the more porous rocks, especially sandstones, in which they are now held. As there are at present no surface indications of the presence of either oil or gas, it is probable that considerable quantities have escaped from outcropping strata during the process of erosion.

MISCELLANEOUS NOTES ON OIL AND GAS.

CHARACTER OF THE OIL.

Washington County lies in what is known technically as the southwest district of Pennsylvania and northern West Virginia. All the oil produced in this district is a high grade of petroleum. It has a paraffin base and a high degree of purity. In color it varies somewhat. Though generally green, it is sometimes black, and in a few cases amber or even nearly transparent.

---

[a] Report Geol. Survey Ohio, vol. 6, Economic geology, 1888, pp. 60–83.

COMPOSITION OF NATURAL GAS.

Chemically, natural gas from the Pennsylvania fields consists chiefly of the hydrocarbons of the paraffin series, with nitrogen, traces of carbon dioxide, oxygen, hydrogen, and ammonia. The chief constituent is methane (CH_4), the lowest member of the paraffin series of hydrocarbons. Methane is one of the products of the destructive distillation of coal and consequently constitutes a large proportion of ordinary coal gas. It is also produced in association with hydrogen when plants decay at the bottom of rivers and swamps. The name "marsh gas" is therefore sometimes applied to it. Methane, when pure, is odorless and not poisonous. Its specific gravity is 0.55297. One cubic meter weighs 0.7148 kilogram; 1 cubic foot, 312.36 grams. Methane requires twice its volume of oxygen, or 10 volumes of air, for its complete combustion, and the products are carbon dioxide and water vapor.

Occasionally a well yields this gas in a nearly pure condition. Generally, however, there is quite a proportion of impurities. A number of analyses have been made at various times of gas from Pennsylvania wells. One of these is from the Houston well at Houston, one-third of a mile west of the station, on Plum Run. The well is 1,794 feet deep and is drilled nearly through the Gantz sand. The Salt sand and its gas were found at 850 feet, but this was cased off. The well may therefore be considered as yielding gas from the Gantz sand exclusively. The gas from the Salt sand is said to burn with a whiter but more sooty flame than that from the greater depth. The occurrence of an upper, less productive sand, yielding gas of greater illuminating power, is said to be a common feature in the gas fields of the State. The sample of gas was collected on March 18, 1887. The analysis is given below:[a]

Analysis of gas from the Houston well.

Nitrogen	15.30	Oxygen	Trace.
Carbon dioxide (CO_2)	.44	Hydrogen sulphide (H_2S)	0
Hydrogen	0	Parraffins (mostly) (CH4)	84.26
Ammonia (NH_3)	Trace.		
			100

The paraffins mentioned in this analysis have the following average composition: Carbon, 76.68 per cent; hydrogen, 23.32 per cent.

The following analysis represents a fair average for Pennsylvania natural gas in general and is given here for comparison:

Average analysis of natural gas in Pennsylvania and West Virginia.[b]

Marsh gas (CH_4)	80.85	Hydrogen	0.10
Other hydrocarbons	14	Hydrogen sulphide (H_2S)	0
Nitrogen	4.60	Oxygen	Trace.
Carbon dioxide (CO_2)	.05		
Carbon monoxide (CO)	.40		100

---

[a] White, I. C., West Virginia Geol. Survey, vol. 1 (a), Oil and gas, 1904, p. 539.

[b] Oliphant, F. H., The production of natural gas; extract from Mineral Resources U. S. for 1904, U. S. Geol. Survey, 1905, p. 12.

WASTE OF NATURAL GAS.

The waste of natural gas in the western Pennsylvania and Ohio fields in the early days of production was enormous. From some wells it has been estimated as equivalent to hundreds of tons of coal per day. This was due largely to the enormous pressure developed at the outset in some of the big producers. Measures were soon taken to stop the waste. The gas from the McGuigan well, however, as already stated, flowed away for more than a year before a main was laid to Pittsburg.

Aside from the waste due to uncontrollable pressure in the early wells, there has been a great deal of loss of gas owing to the fact that the producers and consumers were careless in its transportation and utilization. Much gas is still wasted through unplugged wells, from leaky joints, and from producing oil wells. Many farmers who own gas wells foolishly allow the gas to burn all day from pipes in front of their houses. In one case gas was observed burning at the top of a pipe in the center of a corn field. The writer has passed through villages where the street lights were allowed to burn all day. I. C. White has estimated that in West Virginia one-fourth of the entire production is daily wasted without accomplishing any useful purpose.[a] Recently there has been a gradual awakening to the inexcusable waste, and it is hoped that before long all the gas produced will be utilized.

VALUE OF GOOD WELL RECORDS.

The advantage of keeping accurate and complete records of the wells is almost universally underestimated. In the great majority of cases only one or two coal beds and the principal oil and gas sands are noted by the drillers. These answer their purpose for recognizing the sands, but tell nothing of the character or distribution of the intervening formations, and thereby render it impossible to draw any geologic conclusions of value.

A few drillers and contractors have kept records in which the thickness and depth of all beds from the surface to the bottom of the well have been noted. It is urged that more such records be kept. Especially is it important to note the positions and character of all coal, red shale, and limestone beds, as on these the geologist depends most of all for his correlations. Such data assist in the determination of geologic structure and frequently enable him to define the limits of a certain formation, and thus to give the geologic name corresponding to the driller's term for a certain sand. To meet the needs of drillers and other persons who wish to keep pace with the most modern methods of taking notes, the United States Geological Survey keeps in stock a large number of pocket record books, which may be obtained without cost by all drillers who desire them. The covers of these notebooks contain a few geologic notes and suggestions to drillers. The Survey is also glad to receive samples of formations passed through at various depths in the wells, as by careful study and comparison it is frequently possible for the geologists to make interpretations which the record alone will not give.

---

[a] West Virginia Geol. Survey, vol. 1 (a), Oil and gas, 1904, p. 30.

RECORDS OF WELLS IN THE AMITY QUADRANGLE.

For the convenience of persons prospecting and operating in this region the following table has been prepared, giving the depths to the principal oil and gas sands and other important beds penetrated by the drill. The accuracy of these figures can not be vouched for, but they are taken from the best available records furnished by the drillers.

Depths, in feet, to coals and principal

[From records furnished by the owners. * Signifies that the figures given represent the depths of gas by level. All other elevations

No. on Pl. I.	Elevation.	Name of well.	Owner.	Product.	Producing sand.
		Amwell Township.			
1	1,135	Daniel Baker, No. 1		Dry?	
2	1,215	Zach Baker		Gas	Fifty-foot
3	1,010	Baker		do	
4	1,050?	Bebout			
5	940	Clark Hackney, No. 1	Fergus Oil Co	Dry	
6	950	Hackney, No. 2	Carnegie Natural Gas Co.?		
7	1,320	Jas. M. Kuntz, No. 1?	do		
8	960	Meloy, No. 1	Tenmile Oil Co	Gas	
9	968	Meloy, No. 2	do	do	
10		Grant Moniger, No. 2 (or 3).	Carnegie Natural Gas Co	do	
11	1,110	Onias Moniger		do	
12	950	Swart		Dry	
13	1,020	Webb, No. 1	Carnegie Natural Gas Co	Gas	
		Borough of Beallsville.			
14	1,160	Mrs. A. L. Hawkins, No. 2.	Manufacturers' Light and Heat Co.	Gas	
15	1,070	Luse, No. 1	Greensboro Natural Gas Co.	do	Bayard
16	1,095	A. C. Mitchell, No. 1	do	do	
		Borough of Bentleyville.			
17	1,030	Mrs. R. L. Jones	Philadelphia Co	Gas	
18	955	J. G. McCormick, No. 1.	do	Dry	
		Chartiers Township.			
19	955	Arnold, No. 1	Philadelphia Co		
20	1,120	Peter Martin, No. 1	do	Gas	
21	1,000	C. R. Riggle, No. 2	Manufacturers' Light and Heat Co	do	
		Borough of Deemston.			
22	1,185	Burkehammer, No. 1	Monongahela Natural Gas Co.	Gas	
23	1,035	N. T. Clark, No. 1	Manufacturers' Light and Heat Co.	do	
24	865	A. B. Crumrine, No. 1	Greensboro Natural Gas Co.	do	Elizabeth
25	1,115	Demas Crumrine, No. 1	Manufacturers' Light and Heat Co.	do	
26	1,105	Volluntyne Crumrine, No. 1.	Monongahela Natural Gas Co.		
27	1,035	Volluntyne Crumrine, No. 2.	do	Gas	
28	925	Wm. Crumrine, No. 1	Greensboro Natural Gas Co.	do	Elizabeth
29	840	Matilda Davis, No. 2	do	do	
30	965	F. L. Hastings, No. 1	Monongahela Natural Gas Co.		
31	1,045	Mrs. A. L. Hawkins, No. 1.	Manufacturers' Light and Heat Co.	Gas	

sands in the Amity quadrangle.

or oil in the sand; † signifies known steel line measurement; L means that the elevation was determined were determined by aneroid barometer.]

Depth to—															
Waynesburg coal.	Maple town coal.	Pittsburg coal.	Upper Freeport coal.	Salt sand.	Big lime.	Big Injun sand.	Thirty-foot sand.	Gantz sand.	Fifty-foot sand.	Gordon Stray sand.	Gordon sand.	Fourth sand.	Fifth sand.	Bayard sand.	Elizabeth sand.
205	......	525	......	1,441	1,664	1,705	2,277	2,431	2,465	2,567	2,705	2,784	2,817	......	3,031
......	......	640	......	......	......	......	......	......	2,549	......	......	......	......	......	......
225	......	562	......	......	1,678	1,710	2,575	2,425	2,475	2,660	2,685	2,770	2,835	......	......
......	......	602	......	......	......	......	......	......	......	......	......	......	......	......	......
140	......	453	......	1,425	......	1,645	......	......	......	......	......	......	......	......	......
......	......	485	......	......	......	......	2,390	......	......	......	......	......	......	......	......
......	......	......	......	......	......	1,910	......	......	......	......	......	......	......	......	......
144	......	455	......	......	......	......	......	......	......	......	......	......	......	......	......
144	......	455	......	......	......	1,610	......	......	......	......	......	......	......	......	......
......	......	532	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	528	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	460	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	......	......	......	......	1,648	......	......	2,355	......	2,600	2,680	......	......	......
67	......	400	......	1,360	1,595	1,645	2,140	2,333	2,373	......	......	2,622	2,672	2,819	2,894
112	318	434	......	......	......	1,650	......	2,350	2,401	......	......	......	2,770	2,920	......
......	......	......	936	......	1,483	1,545	......	......	2,270	2,450	2,495	......	......	2,670?	2,800?
......	......	308	......	1,240	......	1,528	......	......	......	......	......	......	2,610	......	2,788
......	......	180	......	1,089	......	......	......	......	......	......	2,344	......	......	......	......
......	......	......	......	......	......	......	......	......	......	......	1,992	......	......	......	......
......	......	160	......	......	......	1,252	......	......	2,010	2,144	2,190	......	......	......	......
......	......	......	......	......	......	......	......	1,753	......	......	......	......	......	......	......
......	......	458	......	1,380	......	1,750	2,320	2,380	2,515	......	2,664	2,750	2,805	2,856	2,950
90	315	420	1,100	1,357	......	1,650	2,274	2,350	2,420	......	2,600	2,670	......	2,786	2,925
......	85	208	812	1,129	......	1,454	......	......	......	......	......	......	......	2,592	2,698
......	......	478	......	......	1,630	1,695	......	2,380	2,469	......	2,693	......	2,803	2,872	2,971
......	......	387	990	1,345	......	1,638	2,110	2,330	2,370	......	......	......	2,755	2,795	2,890
......	......	397	1,000	1,355	......	1,648	2,120	2,340	2,380	......	......	......	2,765	2,805	2,900
......	......	265	845	1,200	1,450	1,520	2,130	2,100	2,245	......	......	......	......	2,675	2,760
......	......	200	804	......	1,405	1,455	......	2,120	......	2,387	2,402	......	......	......	......
......	......	200	......	1,100	......	1,450	......	2,170	......	......	2,430	......	2,553	2,620	2,705
......	298	425	......	1,413	1,589	1,645	......	......	2,342	......	......	......	......	......	......

Depths, in feet, to coals and principal

[From records furnished by the owners. *Signifies that the figures given represent the depths of gas by level. All other elevations

No. on Pl. I.	Elevation.	Name of well.	Owner.	Product.	Producing sand.
		Borough of Deemston—Continued.			
32	1,035	Mrs. A. L. Hawkins, No. 3.	Manufacturers' Light and Heat Co.	Gas	
33	1,000	L. V. Martindale, No. 1		do	
34	1,080	L. V. Martindale, No. 2			
35	1,225	Wm. Michiner, No. 1	Monongahela Natural Gas Co.	Gas	
36	915	Jas. M. Miller, No. 1	do		
37	1,050	W. S. Morey, No. 1	do		
38	845	Oberholt, No. 1	do	Gas	
39	875	Porter, No. 1	Carnegie Natural Gas Co.	do	
40	995	Geo. T. Regester, No. 1	Monongahela Natural Gas Co.	do	
41	1,165	Spindler, No. 1	do	do	
42	1,155	David Teagarden, No. 1	do	do	
43	1,045	Hiram Teagarden, No. 1	do	do	
44	1,175	J. L. Thompson, No. 1	Greensboro Natural Gas Co.	do	
45	1,105	J. L. Thompson, No. 2	do	do	
46	1,045	J. L. Thompson, No. 3	do	do	Elizabeth
47	1,020	J. L. Thompson, No. 4	do	do	Bayard
48	1,030	J. L. Thompson, No. 5	do	do	Elizabeth
49	1,045	Wm. Ward	Monongahela Natural Gas Co.		
50	1,235	A. M. Wickerham, No. 1	do		
51	925	John B. Wise, No. 2	Philadelphia Co	Gas	
52	1,005	Mary S. Wise, No. 1?	do	do	Elizabeth
53	1,090	Grant Zollars, No. 1	Monongahela Natural Gas Co.	do	
		East Bethlehem Township.			
54	1,200	Blakely, No. 1	Monongahela Natural Gas Co.	Gas	
55	1,145	Selig heirs	do		
		Morris Township, Greene County.			
56	1,270	Bristor Bros., No. 3	South Penn Oil Co	Oil	Gantz
57	1,265?	Crummerine		Gas	do
58	1,485	Wm. Fonner, No. 4	South Penn Oil Co	Oil	do
59	1,470	Abner Lacock	J. L. Dunn & Co	do	Hundred-foot
60	1,228	Elmas Loughman, No. 1	Tim Ross & Co	do	Gantz
61	1,170	John Ross, No. 1?		Gas	do
		Morris Township, Washington County.			
		Carey, No. 1	Tim Ross & Co	Oil	Fifty-foot
62	1,130	Elmas Carey, No. 1	Dunns Station Oil Co	do	do
63	1,050	D. A. Conger	J. L. Dunn & Co		
64	990	Ringland	Carnegie Natural Gas Co	Gas	Gantz
65	1,350	J. L. Dunn, No. 1	Dunns Station Oil Co	Oil	do
66	1,090	Dunn, No. 2	do		

sands in the Amity quadrangle—Continued.

or oil in the sand; † signifies known steel line measurement; L means that the elevation was determined were determined by aneroid barometer.]

Depth to—															
Waynesburg coal.	Mapletown coal.	Pittsburg coal.	Upper Freeport coal.	Salt sand.	Big lime.	Big Injun sand.	Thirty-foot sand.	Gantz sand.	Fifty-foot sand.	Gordon Stray sand.	Gordon sand.	Fourth sand.	Fifth sand.	Bayard sand.	Elizabeth sand.
67	......	400	......	1,300	1,595	1,645	2,140	2,333	2,373	......	......	2,622	2,672	2,819	2,894
......	......	400	......	1,334	1,560	1,640	......	2,315	2,400	......	2,550	......	2,726	2,772	2,884
155	......	485	......	1,425	1,655	1,710	......	2,400	2,430	2,580	2,675	2,705	2,785	2,890	2,985
......	......	485	......	1,420	......	1,720	......	......	2,455	......	2,680	......	......	2,890	2,985
......	......	380	......	1,280	......	1,580	2,200	2,330	......	......	......	......	......	......	......
......	......	408	......	1,320	......	1,650	2,210	2,340	2,381	......	2,620	......	2,735	2,817	2,909
......	......	210	810	1,150	......	1,450	......	2,100	2,207	......	2,357	2,447	......	2,547	2,697
......	......	240	......	......	......	1,198	......	2,134	2,201	......	2,423	2,432	2,457	2,461	2,729
......	......	395	......	1,360	......	1,630	......	2,325	2,422	......	2,610	......	......	2,765	2,892
......	......	480	......	1,280	......	1,728	2,290	2,390	2,420	......	2,660	......	......	2,910	3,010
......	......	426	......	......	......	1,660	......	......	2,400	......	......	......	2,785	2,835	2,725
......	......	412	1,020	1,330	......	1,650	2,225	2,335	2,390	......	......	......	......	......	2,908
190	......	530	......	......	......	1,775	......	......	......	......	......	......	......	......	......
150	410	506	1,075	......	1,659	1,692	......	......	2,460	......	......	2,724	2,780	2,874	2,995
40	......	375	980	1,335	1,580	1,440	2,220	2,340	2,380	......	......	......	......	2,797	2,881
21	......	358	960	1,315	1,564	1,628	2,200	2,320	2,360	......	......	......	......	2,786	......
58	221	388	940	1,250	1,572	1,617	......	2,307	2,362	2,520	2,550	2,585	2,675	2,770	2,882
......	......	225	810	1,118	......	1,460	2,035	2,150	2,195	......	......	......	......	2,634	2,712
......	......	519	1,240	1,440	......	1,756	2,375	2,445	2,490	......	......	......	......	2,915	3,019
......	......	305	......	......	......	1,538	......	2,260	......	......	2,428	......	......	2,709	2,788
......	......	380	......	......	......	1,600	......	2,310	......	......	......	2,596	......	2,782	2,853
......	......	430	1,030	1,360	......	1,675	2,250	2,340	2,390	......	......	......	......	......	2,919
20	......	375	......	......	1,550	1,615	......	......	2,335	......	......	......	......	2,765	2,865
......	......	315	......	1,215	......	1,565	......	2,285	......	......	......	......	......	......	2,812
515	712	860	......	1,810	1,990	1,935	......	2,771	......	......	......	......	......	......	......
......	......	835	......	......	......	......	......	2,742	......	......	......	......	......	......	......
......	......	1,030	......	......	2,160	2,230	2,780	2,954	......	......	......	......	......	......	......
......	......	1,035	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	835	......	......	......	2,025	......	2,764	......	......	......	......	......	......	......
......	......	735	......	......	......	......	......	2,645	......	......	......	......	......	......	......
......	......	880	......	......	......	2,100	......	2,774	2,812	......	......	......	......	......	......
......	......	725	......	1,490	1,840	1,890	2,485	2,630	2,672	......	......	......	......	......	......
......	......	640	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	506	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	919	......	......	......	......	......	2,830	......	......	......	......	......	......	......
......	......	686	......	......	......	......	......	......	......	......	......	......	......	......	......

Depths, in feet, to coals and principal

[From records furnished by the owners. * Signifies that the figures given represent the depths of gas by level. All other elevations

No. on Pl. I.	Elevation.	Name of well.	Owner.	Product.	Producing sand.
		North Franklin Township.			
67	1,305	Isaac Elmer, No. 1	Manufacturers' Light and Heat Co.		
68	1,135	Wm. Knox, No. 1	do		
69	1,220	W. H. McElree, No. 1	do	Dry	
70	1,165	M. Mounts	do		
71	1,250	Mrs. Snyder	do	Oil and gas	
		North Strabane Township.			
72	995	Jacob Bell	Linden Oil Co	Dry	
73	920	Bell, No. 2	Jefferson Gas Co	Gas	Fifth
74	985	Bell, No. 3	do	do	do
75	1,025	Matthew Berry, No. 1		do	
76	1,000	Matthew Berry, No. 3	Manufacturers' Light and Heat Co.	do	
77	1,110?	Fife heirs, No. 1 (?)	Jefferson Gas Co	do	
78		Fife heirs, No. 2	do	Dry	
79	1,245	Robt. Herron heirs, No. 1.	Manufacturers' Light and Heat Co.	Oil	Gantz
80	1,115	Robt. Herron heirs, No. 2.	do	do	do
81	1,100	Robt. Herron heirs, No. 3.	do	do	
82	985	E. T. Hitchman, No. 1	Canonsburg Light and Heat Co.	Dry	
		Hixon	Jefferson Gas Co		
83	935	A. C. Horner	do	Dry	
84	1,075	Robt. Johnson, No. 1	Manufacturers' Light and Heat Co.	Gas	
85	1,295	Bella Lyle (?)	Jefferson Gas Co	do	Fifth
86	1,120	Sam Linn, No. 3	Manufacturers' Light and Heat Co.	Oil	
87	1,080	Sam Linn, No. 4	do	do	
88	1,120	Sam Linn, No. 5	do	Oil	
89	1,230	Sam Linn, No. 6	do	Gas	
90	1,140	J. B. McBride, No. 2	do		
91	995	J. J. Manes, No. 1	Philadelphia Co	Gas	
92	955?	John P. Manes, No. 1	do	do	
93	1,010?	John P. Manes, No. 2	do	do	Fifth
94	1,025	Jas. V. Manes, No. 1	do	do	do
		Martin, No. 9	Jefferson Gas Co	Oil	Gantz
		Martin, No. 11	do		
95		A. E. Mollenauer	do		
96	1,180	H. P. Mollenauer, No. 1.	Manufacturers Light and Heat Co.	Oil	
		do	do		
97	1,140	H. P. Mollenauer, No. 2.	do	Oil	
98	1,155	H. P. Mollenauer, No. 3.	do	do	
99	983L	H. P. Mollenauer, No. 4.	do	Gas	
100	1,070	H. P. Mollenauer, No. 5.	do	do	
101	995L	J. W. Pollock, No. 1	do	Oil	

sands in the Amity quadrangle—Continued.

or oil in the sand; † signifies known steel line measurement; L means that the elevation was determined were determined by aneroid barometer.]

Depth to—															
Waynesburg coal.	Mapletown coal.	Pittsburg coal.	Upper Freeport coal.	Salt sand.	Big lime.	Big Injun sand.	Thirty-foot sand.	Gantz sand.	Fifty-foot sand.	Gordon Stray sand.	Gordon sand.	Fourth sand.	Fifth sand.	Bayard sand.	Elizabeth sand.
		735				1,960		2,555	2,625			2,895	2,942½		
		568								2,550			2,775		
		635		1,540		1,755	2,250	2,455	2,515	2,677	2,715	2,764			
		590		1,490		1,740		2,420	2,472	2,642	2,680	2,755	2,796		
		654									2,724				
		250													
		175											*†2,397		
		245											*†2,472		
		110													
		24													
		295							*†2,200						
		240													
		550						2,375							
		415						2,253							
		385						2,228	2,278						
											2,065				
		350											†2,555		
		170													
		170													
		490	1,300	*†1,412					2,415				2,730		
		390						2,216	2,270						
		350						2,197					2,558		
		398						2,261	2,270						
		515						2,348	2,726						
		245													
		211				1,360	1,865	2,050		2,312	2,340	2,371	2,425		
		222				1,338	1,895	2,023	2,085	2,263	2,313	2,401	2,450		
		293		1,180				2,110			2,370		2,479		
		270		1,210		1,405			†2,215	2,350	2,385		2,470		
		340						2,215							
		350											†2,540		
		285													
		464						2,308½	2,363						
		410										2,530			
		455						2,291	2,358						
		435						2,283	2,333						
		240				1,390		2,084	2,124	2,307	2,335	2,378	2,450		
		310		1,210		1,447		2,157	2,200	2,374	2,396	2,448	2,523		
		280						2,100	2,162				2,490		

Depths, in feet, to coals and principal

[From records furnished by the owners. *Signifies that the figures given represent the depths of gas by level. All other elevations

No. on Pl. I.	Elevation.	Name of well.	Owner.	Product.	Producing sand.
		North Strabane Township—Continued.			
102	1,205	J W. Pollock, No. 2	Manufacturers' Light and Heat Co.	Oil	
103	1,075	J. W. Pollock, No. 3	do	do	
104	1,145	J. W. Pollock, No. 5	do	do	
105	1,050L.	J. W. Pollock, No. 6	do	do	
106	1,305	Quail, No. 1	McKeown Oil Co	do	Fifty-foot
107	1,305	Quail, No. 2	do		
108	960?	Mrs. C. M. Reed	Associated Producers Co		
109	1,325	Rooney well (No. 2).	Chartiers Oil Co	Oil	
110	1,300	Rooney, No. 5	Manufacturers Light and Heat Co.	Gas	
111	1,015	Thos. Templeton, No. 1.	Philadelphia Co	do	
112		Thome, No. 1	Jefferson Gas Co		
113		Thome, No. 3	do		
114		Thome, No. 4	do		
		Thome, No. 5	do	Gas	Fifth
115	920	Washerbaugh, No. 1	do		
116		Washerbaugh, No. 2	do	Gas	
117		Washerbaugh, No. 3	do	do	
118	1,155	Joshua Wright, No. 1	Chartiers Oil Co	do	Gantz
119		Joshua Wright, No. 4	do	Oil	do
		Nottingham Township.			
		Hoffer, No. 1	Carnegie Natural Gas Co	Dry	
120		E. T Hyde	Liberty Oil and Gas Co	do	
121		McClean heirs		do	
122	1,180?	James Thomas (?)	Philadelphia Co		
		Somerset Township.			
123	1,175?	Henry Andrews, No. 1 (?).	Carnegie Natural Gas Co	Dry	
124	1,275	J. W. Frost, No. 1	do		
125	1,100	J. W Frost, No. 2	do		
126	1,115	Andrew Gamble	Philadelphia Co	Dry	
127	1,170	Eli Hawkins, No. 1	Monongahela Natural Gas Co.	Gas	
128	1,006	A. Hetherington, No. 1.	Philadelphia Co	Dry	
129	975	J. A. Hoffman	Monongahela Natural Gas Co. (?)		
130	985	J. J. Hoffman	Fergus Oil Co	Gas	
131	1,135	Mrs. M. A. Jones	Loury Oil Co		
132	1,200	Joseph Kammerer		Gas	
133	1,280	Margaret Martin, No. 1	Monongahela Natural Gas Co.		
134	1,265	J M. Oller, No. 1	Philadelphia Co	Dry	
135	1,090	A. T. Scott, No. 1	Monongahela Natural Gas Co.		
136	1,100	Isaac Tombaugh, No. 2 (?).	Philadelphia Co	Dry	
		South Franklin Township.			
137	1,145	Doctor Dodd			
138	1,150	Ira Lacock	Forest Oil Co	Oil (little)	
139	1,170	Jas. McClintock			

sands in the Amity quadrangle—Continued.

or oil in the sand; † signifies known steel line measurement; L means that the elevation was determined were determined by aneroid barometer.]

Depth to—															
Waynesburg coal.	Mapletown coal.	Pittsburg coal.	Upper Freeport coal.	Salt sand.	Big lime.	Big Injun sand.	Thirty-foot sand.	Gantz sand.	Fifty-foot sand.	Gordon Stray sand.	Gordon sand.	Fourth sand.	Fifth sand.	Bayard sand.	Elizabeth sand.
......	......	490	......	......		......	......	2,343	2,376	......	......	......	......	......	......
......	......	359	......	......		......	......	2,192	......	......	......	......	......	......	......
......	......	436	......	......		......	......	2,271½	2,322	......	......	......	......	......	......
......	......	324	......	......		......	......	2,165	2,211½	......	......	......	......	......	......
......	......	......	......	......		......	......	2,360	2,414	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,355	2,409	......	......	......	......	......	......
......	......	260	860	......	......	......	......	......	2,147	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,367	2,414	......	......	......	2,740	......	......
......	......	599	......	......	1,706	1,745	......	2,432	2,489	......	......	......	......	......	......
......	......	262	......	1,117	......	......	1,937	2,104	2,140	......	......	2,425	2,475	......	......
......	......	......	......	......	......	......	......	......	......	......	......	......	2,630	......	......
......	......	480	......	......	......	......	......	......	......	......	......	......	†2,700	......	......
......	......	590	......	......	......	......	......	......	......	......	......	......	2,795	......	......
......	......	420	......	......	......	......	......	......	......	......	......	......	†2,625	......	......
......	......	190	......	......	......	......	......	......	......	......	......	......	†2,380	......	......
......	......	350	......	......	......	......	......	......	......	......	......	......	†2,565	......	......
......	......	440	......	......	......	......	......	......	......	......	......	......	*†2,655	......	......
......	......	......	......	......	......	......	......	2,211½	2,255	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,329	2,348	......	......	......	......	......	......
......	......	65	......	......	......	1,310	1,880	......	2,040	......	......	......	2,400	......	......
......	......	365	......	......	500	1,450	......	......	......	......	......	......	......	......	......
......	......	(a)	......	......		......	......	......	......	......	......	......	2,480	......	......
......	230	332	......	1,200		1,520	......	2,247	2,279	......	......	......	......	2,722	......
......	......	632	......	......		1,763	......	......	......	2,370	2,765	2,810	2,875	......	......
......	......	510	......	......		......	......	......		......		......	......	......	......
......	......	360	......	......	......	......	......	......		......	......	......	......	......	......
......	......	320	......	......	......	1,476	......	2,227	2,260	......	2,480	......	......	2,710	......
......	......	355	......	1,250	......	1,560	2,160	2,295	..	......	......	......	......	......	......
......	......	258	......	1,195	......	1,475	......		..	......	......	......	2,558	......	2,740
......	......	225	......	......	......	......	......		2,200	......	......	......	......	......	......
......	......	295	......	......	......	1,400	......		..	......	......	......	......	......	......
......	......	508	......	......	......	......	......	2,315½	......	......	......	......	......	......	......
......	......	395	......	......	......	1,650	2,180	2,380	......	......	2,598	2,719	2,795	......	......
......	......	500	......	......	......	......	2,295	..		......	......	......	......	......	......
......	......	431	......	......	..	......	......	..	..	......	......	......	......	......	......
......	......	315	945	1,225	..	1,650	2,106	..	..	......	......	......	......	......	......
......	......	410	......	......	..	1,606	......	2,320	..	......	..	......	......	......	......
......	......	714	......	......	..	......	......	2,504	..	......	..	......	......	......	......
......	......	700	......	......	..	......	......	..	2,602	2,792	..	2,871	2,908	......	......
......	......	648	......	......	..	......	......	..	..	......	..	......	2,800	......	......

[a] Coal reported missing.

Depths, in feet, to coals and principal

[From records furnished by the owners. *Signifies that the figures given represent the depths of gas
by level. All other elevations

No. on Pl. I.	Elevation.	Name of well.	Owner.	Product.	Producing sand.
		South Strabane Township.			
140	1,079L	Wm. Barre, No. 1	Forest Oil Co	Oil	
141	1,115	Wm. Barre, No. 3	do		
142	1,260	Wm. Barre, No. 4	do		
143	1,315	Wm. Barre, No. 5	do		
144	1,265	Wm. Barre, No. 6	do		
145	1,320	Wm. Barre, No. 7	do		
146	1,340	Wm. Barre, No. 8	do	Oil	Gantz
147	1,275	Wm. Barre, No. 9	do	do	do
148	1,265	Wm. Barre, No. 10	do	do	Gantz, Fifty-foot.
149		Wm. Barre, No. 11	do	do	Gantz, Gordon
150	1,325	Wm. Barre, No. 12	do	do	Gantz, Fifty-foot.
151	1,190	Wm. Barre, No. 13	do	do	do
152	1,142L	J. & G. M. Cameron, No. 2.	Chartiers Oil Co	do	Gantz
153	1,210	J. & G. M. Cameron, No. 3.	do	do	do
154	1,333	J. & G. M. Cameron, No. 5.	do	do	
155	1,192	J. & G. M. Cameron, No. 6.	do	do	Gantz, Fifty-foot.
156	1,285	J. & G. M. Cameron, No. 9.	do	do	Gantz
157	1,255	J. & G. M. Cameron, No. 11.	do	do	do
158	1,260	J. & G. M. Cameron, No. 12.	do	Oil and gas	Gantz, Fifty-foot.
159	1,260?	J. & G. M. Cameron, No. 13.	do	Oil	Gantz
160	1,325	William Davis, No. 1	Associated Producers Co	do	Gantz, Fifty-foot.
161	1,280	William Davis, No. 2	do	do	do
162	1,260	William Davis, No. 3	do	do	do
163	1,215	William Davis, No. 4	do	do	do
164		William Davis, No. 5	do	do	Gantz
165	1,200	William Davis, No. 7	do	do	do
166	1,235	William Davis, No. 8	do	do	Fifty-foot, Gantz.
167	1,325	William Davis, No. 9	do	do	Fifty-foot
168	1,255	William Davis, No. 10	do	do	Gantz
169	1,200	Fergus, No. 1		do	do
170	1,110?	do	Fergus Oil Co	do	
171	1,115	Fergus, No. 2 (?)	Hanover Oil Co		
172	1,115	Fergus, No. 4 (?)		Oil	Gantz
		S. P. Fergus, No. 1	Chartiers Oil Co	do	do
		S. P. Fergus, No. 2	do	do	Gantz, Fifty-foot.
	1,286L	S. P. Fergus, No. 5	do	do	Gantz
		S. P Fergus, No. 6	do		do
		S. P. Fergus, No. 7	do	Oil	do
		S, P. Fergus, No. 11	do	do	do
173	1,140	Robert Forest, No. 1	Forest Oil Co	Oil	
174		Kountz, No. 1	People's Gas Co	Dry	
175	1,165	Kountz, No. 2	do		
176	1,065	Kountz, No. 3	W. F. Borchers	Dry	
177	1,220	J. H. Little, No. 1	Carnegie Natural Gas Co		

sands in the Amily quadrangle—Continued.

or oil in the sand; † signifies known steel line measurement; L means that the elevation was determined were determined by aneroid barometer.]

Depth to—															
Waynesburg coal.	Mapletown coal.	Pittsburg coal.	Upper Freeport coal.	Salt sand.	Big lime.	Big Injun sand.	Thirty-foot sand.	Gantz sand.	Fifty-foot sand.	Gordon Stray sand.	Gordon sand.	Fourth sand.	Fifth sand.	Bayard sand.	Elizabeth sand.
								2,209	2,239						
								2,398½	2,318	2,348					
								2,398½							
		612						2,446							
								2,435							
								2,518	2,577						
								2,487							
								2,431							
								2,400	2,470						
								2,280			2,314				
								2,530	2,594						
								2,309	*2,430						
		460				1,590		2,262½							
		620						2,343							
		550						2,433							
								2,386	2,430						
								2,455							
		615						2,379	2,471						
		607						2,432			2,700	2,750	2,808		
								2,419							
		659						2,480							
		630						2,453	2,518						
		625						2,454	2,511						
								2,393	2,456						
		642						2,467	2,521						
								2,389	2,452						
								2,437	2,488						
								2,497	2,552						
								2,421	2,482						
								2,394							
		530		1,492	1,646	1,680		2,460							
		548		1,500		1,700	2,180	2,391		2,583	2,609	2,649	2,723		
								2,365	2,420						
								2,456	2,517						
		595				1,830		2,457½	2,512						
		16		1,560				2,450							
		526						2,350							
		640						2,461							
		590						2,405							
		420						2,250	2,309	2,497	2,528	2,573	2,643		
		420						2,180		2,401					
		470													
		234													
							2,415	2,485	2,505			2,945			

Depths, in feet, to coals and principal

[From records furnished by the owners. *Signifies that the figures given represent the depths of gas by level. All other elevations

No. on Pl. I.	Elevation.	Name of well.	Owner.	Product.	Producing sand.
		South Strabane Township—Continued.			
178	1,075	J. D. McNary, No. 1	Chartiers Oil Co	Oil	Fifty-foot
179	1,215	J. D. McNary, No. 2	Manufacturers' Light and Heat Co.		
180	1,060?	Manifold, No. 1 (?)	Manifold Oil Co		
181	1,045?	Manifold, No. 2 (?)			
182	1,200	Martin Bros., No. 1	McKeoun Oil Co	Oil	Gantz
183	1,120	Martin Bros., No. 2	do	do	do
184	1,160	Martin Bros., No. 3	do		
185	1,115	Martin Bros., No. 4	do		
186	1,255	Martin Bros., No. 5	do	Oil	Gantz
187	1,255	Martin Bros., No. 6	do	do	Gantz, Fifty-foot.
188	1,250	Martin heirs, No. 1	do	do	Fifty-foot
189	1,290	Martin heirs, No. 2	do	do	Gantz
190	1,215	Martin heirs, No. 3	do	do	do
191	1,200	Martin heirs, No. 4	do	do	do
192	1,270	Martin heirs, No. 5	do	do	Gantz, Fifty-foot.
193	1,255	Martin heirs, No. 6	do		
		Morgan, No. 1	Forest Oil Co	Oil	Gantz, Fifty-foot.
194	1,290?	Morgan, No. 2 (?)	do	do	Gantz
		Morgan, No. 3	do	do	do
		Morgan, No. 5	do	do	Gantz, Fifty-foot.
		Morgan, No. 6	do	do	Gantz
		Morgan, No. 7	do	do	do
		Morgan, No. 8	do	do	Gantz, Fifty-foot.
		Morgan, No. 9	do	do	do
		Morgan heirs, No. 11	do	do	Fifth
		R. J. Munce, No. 1	Jefferson Gas Co	Gas	do
		R. J. Munce, No. 2	do		
195	1,345	W. J. Munce, No. 1	McKeoun Oil Co	Oil	Gantz, Fifty-foot.
196	1,305	Munce, No. 2	do	do	Fifty-foot
197	1,360	Munce, No. 3	do	do	Gantz (or Fifty-foot).
198	1,280	Munce, No. 4	do	do	do
199	1,330	Munce, No. 5	do	do	do
200	1,350	Munce, No. 6	do	do	do
201	1,390	Munce, No. 7	do	do	do
202	1,280	Munce, No. 8	do		
203	1,260	Munce, No. 10	do	Oil	Fifty-foot
204	1,280	Munce, No, 12	do	do	Gantz, Fifty-foot.
205	1,260	Munce, No. 13	do	do	do
206	1,350	Munce, No. 14	do	do	do
207	1,240	Munce. No. 15	do	do	Fifty-foot
208	1,085	Munce, No. 16	do	do	
209	1,135	Munce, No. 17	do	do	Gantz, Fifty-foot.
210	1,095	Munce. No. 18	do	do	Fifty-foot
211	1,190	Munce, No. 20	do	do	do
212	1,190	Myers, No. 1	Carnegie Natural Gas Co.	Gas	

sands in the Amity quadrangle—Continued.

or oil in the sand; † signifies known steel line measurement; L means that the elevation was determined were determined by aneroid barometer.]

Depth to—															
Waynesburg coal.	Maple town coal.	Pittsburg coal.	Upper Freeport coal.	Salt sand.	Big lime	Big Injun sand.	Thirty-foot sand.	Gantz sand.	Fifty-foot sand.	Gordon Stray sand.	Gordon sand.	Fourth sand.	Fifth sand.	Bayard sand.	Elizabeth sand.
								2,109	2,160						
		315									2,404		2,515		
		286				1,440					2,377	2,421	2,498		
						1,400									
								2,290							
								2,293							
									2,448						
								2,290							
								2,415	2,469						
		506						2,359	2,412						
								2,348	2,409						
								2,428							
								2,328	2,384						
								2,319							
								2,296	2,350						
								2,360							
								2,470	2,530						
		600						2,428							
								2,413	2,469						
								2,325	2,375						
								2,320	2,366						
								2,577	2,624						
								2,569	2,619						
								2,443	2,491						
		540						2,375	2,425	2,610	2,643	2,704	2,758		
													2,780		
													†2,805		
								2,419	2,476						
								2,335	*2,390						
								2,418							
								2,360							
								2,438							
								2,399							
								2,437							
						1,522									
								2,338							
								2,355	2,420						
								2,370	2,425						
								2,444	2,502						
								2,352	2,398						
								2,121							
								2,300	2,350				2,692		
		320		1,190	1,420	1,470	1,940	2,159	2,204						
		390		1,300	1,500	1,520	1,950	2,215	2,260						
						1,790									

Depths, in feet, to coals and principal

[From records furnished by the owners. * Signifies that the figures given represent the depths of gas by level. All other elevations

No. on Pl. I.	Elevation.	Name of well.	Owner.	Product.	Producing sand.
		South Strabane Township—Continued.			
213	1,195	Quail, No. 1	Quail Oil Co	Dry	
214	1,100	Quail (2d), No. 2	McKeoun Oil Co	Oil	Fifty-foot
215	1,070	Alvin M. Smith, No. 1	Chartiers Oil Co	do	Gantz
216	1,060	Alvin M. Smith, No. 2	do	do	do
217	1,280	Alvin M. Smith, No. 3	do	do	do
218	1,290	Alvin M. Smith, No. 4	do	do	do
219	1,070	Alvin M. Smith, No. 5	do	do	do
220	1,192	Alvin M. Smith, No. 6	do	do	do
221	1,125	Alvin M. Smith, No. 7	do	do	do
222	995	W. J. Smith, No. 2	Forest Oil Co	Dry	
223	1,230?	W. W. Smith, No. 1(?)	do		
224	1,175	W. W. Smith, No. 4	do	Gas	Fifth
	....	Mary Stewart, No. 1	do	Oil	Gantz
225	1,120	J. R. Taylor, No. 1	do	do	
226	1,159L	M. Taylor, No. 1	do	do	Gantz, Fifty-foot.
227	1,250	M. Taylor, No. 2	do	do	do
228	1,325L	M. Taylor, No. 3	do	do	do
229	1,280	M. Taylor, No. 4	do	do	do
230	1,225	M. Taylor, No. 5	do	do	Gantz
231	....	M. Taylor, No. 6	do	do	do
232	1,280	M. Taylor, No. 7	do	Gas	Bayard
233	1,300	Wade, No. 2	Akins Bros	Oil	Gantz
234	1,225	Washington Floral Co.	Cameron Oil Co	do	Gantz, Fifty-foot.
235	1,155	Willetts, No. 1	Willetts Oil Co	do	Gantz
236	1,135	Willetts, No. 2	do	do	do
237	1,100	Willetts, No. 3	do	do	do
238	1,130	Willetts, No. 4	do	do	do
239	1,070	Willetts, No. 5	do	do	do
240	1,100	Willetts, No. 6	do	do	do
241	1,215	Willetts, No. 7	do	do	do
242	1,315	Willetts, No. 8	do	do	do
243	1,185	Willetts, No. 9	do	do	do
244	1,190	Willetts, No. 10	do	do	do
245	1,065	Willetts, No. 11	do	do	Big Injun
	....	Willetts, No. 12	do	do	Gantz
	....	Willetts, No. 13	do	do	do
	....	Willetts, No. 14	do	do	do
	....	Willetts, No. 15	do	do	do
	....	Willetts, No. 16	do	do	do
246	1,160	Willetts, No. 17	do	do	do
	....	Willetts, No. 18	do	do	do
	....	Willetts, No. 19	do	do	do
247	1,135	Willetts, No. 20	do	do	do
	....	Willetts, No. 21	do	do	do
	....	Willetts, No. 22	do	do	do
	....	Willetts, No. 24	do	do	do

sands in the Amity quadrangle—Continued.

or oil in the sand; † signifies known steel line measurement; L means that the elevation was determined were determined by aneroid barometer.]

Depth to—															
Waynesburg coal.	Mapletown coal.	Pittsburg coal.	Upper Freeport coal.	Salt sand.	Big lime.	Big Injun sand.	Thirty-foot sand.	Gantz sand.	Fifty-foot sand.	Gordon Stray sand.	Gordon sand.	Fourth sand.	Fifth sand.	Bayard sand.	Elizabeth sand.
		405						2,236	2,291		2,530		2,625		
								2,130	2,188½						
								2,142							
								2,121							
								2,340							
		510						2,362							
								2,130							
								2,263							
								2,198							
		505		1,293	1,605	1,671		2,375		2,540		2,650	2,735	2,890	
		536						2,964½	2,424						
		492						2,316	2,369			2,637	2,702		
		666						2,507							
		377						2,220	2,277	2,477	2,495	2,540	2,611		
		410						2,280	2,340						
								2,382	2,440						
								2,468	2,528						
		615						24,33	2,490						
								2,358	2,488						
								2,395	2,459						
								2,415	2,471		2,556	2 703	2,746	2,802	
								2,516	2,567						
280		622		1,530	1,700	1,760	2,270	2,440	2,480						
		450?						2,286							
		†400						2,230							
		†387						2,222							
		†400													
		†380						2,187							
								2,203							
								2,347							
								2,465							
								2,324							
								2,324							
								2,218							
								2,219							
								2,444							
								2,306							
								2,425							
								2,279							
								2,297							
								2,461							
								2,219							
								2,345							
								2,366							
								2,192							

Depths, in feet, to coals and principal

[From records furnished by the owners. * Signifies that the figures given represent the depths of gas
by level. All other elevations

No. on Pl. I.	Elevation.	Name of well.	Owner.	Product.	Producing sand.
		South Strabane Township—Continued.			
248	1,100	Willetts, No. 25	Willetts Oil Co	Oil	Gantz
249	1,140	Willetts, No. 28	do	do	do
250	1,250	Workman, No. 1	Forest Oil Co	do	do
251	1,315	Workman, No. 2	do	do	do
252	1,110	R. D. Wylie, No. 1	Pew & Emerson		
253	1,040	R. D. Wylie, No. 1	Pew & Singleton		
		Union Township.			
		Henry Smith, No. 1	Chartiers Oil Co		
		Borough of Washington (also including East Washington and West Washington).			
254	1,060	Agnew, No. 1	Geo. Davis & Co. (?)		
255	1,060	Agnew, No. 2	do		
256	1,165	Culbertson	Murdock Baldwin Oil Co	Gas and oil	Gantz, Fourth
257	1,175	Richard Forest, No. 1	Loury Oil Co	Oil	Gantz
258	1,170	Richard Forest, No. 2	do		
	1,175	Richard & Joshua Forest, No. 1 (?).	Joshua Oil Co	Dry	
259	1,205	Robert Forest		Oil	Gantz
260	1,060	Harding	O. W. Akins	do	do
		Harding, No. 2	Akins Bros	do	do
		Harding, No. 3	do		
261	1,145	Mathew Linn	W. F. Borchers	Dry	
262	1,080	Lustic (?)	Akins Bros		
263	1,055	Morgan	do	Oil	Gantz
264	1,050?	Reed	do	do	do
265	1,055?	Reed	Associated Producers Co		
266	1,025?	Smith, No. 1 (?)		Gas	"Verner"
267	1,055?	Smith, No. 2 (?)		do	Fifth
268	1,025?	Smith, No. 3 (?)		do	Gantz
269	1,190	Wade, No. 3	Akins Bros	Oil	do
270	1,120?	Triangle well	Associated Producers Co	Gas and oil	
271	(?)	Wade, No. 4	Akins Bros	Oil	Gantz
272	1,150	Geo. Warrick, No. 1	Murdock-Baldwin Oil Co	Oil and gas	do
		West Bethlehem Township			
273	1,190	N. T. Clark, No. 2	Manufacturers' Light and Heat Co.	Gas	
		John I. Cleaver	Monongahela Natural Gas Co.	do	
	1,265?	Ola Crumrine (?)	Philadelphia Co	do	
274	1,000?	Drague, No. 1 (?)	Carnegie Natural Gas Co	do	
275	1,185	James Grable, No. 1	Monongahela Natural Gas Co.	do	

sands in the Amity triangle—Continued.

or oil in the sand; † signifies known steel line measurement; L means that the elevation was determined were determined by aneroid barometer.]

Depth to—															
Waynesburg coal.	Mapletown coal.	Pittsburg coal.	Upper Freeport coal.	Salt sand.	Big lime.	Big Injun sand.	Thirty-foot sand.	Gantz sand.	Fifty-foot sand.	Gordon Stray sand.	Gordon sand.	Fourth sand.	Fifth sand.	Bayard sand.	Elizabeth sand.
......	......	......	......	......	......	......	......	2,218	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,192	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,546	2,600	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,539	2,593	......	......	......	......	......	......
......	......	217	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	280	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	1,906	1,930	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,277	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,305	......	......	......	......	......	......	......
......	......	510	......	......	1,600	1,625	......	2,316	......	......	2,591	2,640	2,703	......	......
......	......	515	......	......	......	......	......	2,318	......	......	......	......	......	......	......
......	......	515	......	......	......	......	......	2,322	......	......	......	......	......	......	......
......	......	234	......	......	......	......	......	2,053	......	2,280	......	......	2,412	......	......
......	......	540	......	......	......	......	......	2,321	2,372	......	......	......	......	......	......
......	......	......	......	......	......	1,697	......	2,271	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,354	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,390	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,272	......	......	......	......	2,661	......	......
......	......	......	......	......	......	......	......	2,275	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,259	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,285	......	......	......	......	......	......	......
......	......	265	860	......	......	......	......	2,147	......	......	......	......	......	......	......
......	......	450	......	......	......	......	......	2,270	......	......	......	......	......	......	......
......	......	430	......	......	......	......	......	2,248	......	......	2,515	......	2,631	......	......
......	......	425	......	......	......	......	......	2,245	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	2,395	2,445	......	......	......	......	......	......
......	......	355	......	......	......	......	......	2,160	2,295	2,421	2,444	......	......	......	......
......	......	......	......	......	......	......	......	2,370	2,418	......	......	......	......	......	......
......	......	495	......	1,430	1,500	1,625	......	2,300	......	......	......	......	......	......	......
280	......	614	......	1,540	1,770	1,845	2,454	2,500	2,610	......	2,780	2,825	2,900	3,009	3,100
......	......	260	......	1,160	......	1,500	......	......	2,260	......	......	......	......	......	......
......	......	205	......	......	......	1,444	......	2,148	......	......	......	......	......	......	......
......	......	345	......	......	......	......	......	......	......	......	......	2,360	......	2,567	2,687
......	......	590	......	1,490	......	1,850	2,400	2,500	2,540	......	2,840	......	......	2,990	3,080

Depths, in feet, to coals and principal

[From records furnished by the owners. * Signifies that the figures given represent the depths of gas by level. All other elevations

No. on Pl. I.	Elevation.	Name of well.	Owner.	Product.	Producing sand.
		West Bethlehem Township—Continued.			
276	855	J. R. Hawkins, No. 1	Philadelphia Co	Gas	
277	1,090	Harvey Hill, No. 1	do	do	
278	1,075	Margaret Hill, No. 1	Manufacturers' Light and Heat Co.	Oil	
279	1,010	Stephen W. Hill, No. 1	do	Gas	
280	1,010	Tom. T. Hill	Philadelphia Co	Dry	
281	1,100	Uriah Hill heirs (Martha Zollars).	Monongahela Natural Gas Co.	Gas	
282	1,075	Wm. B. Hill, No. 1	do	do	
283	960	Isaac Horn, No. 1	Carnegie Natural Gas Co	do	
		J. N. Horn, No. 1	Chartiers Oil Co		
284	1,090	J. V. Knestric			
		Sarah E. Lacock, No. 1	Chartiers Oil Co		
285	1,000	J. C. Martin, No. 1	Manufacturers' Light and Heat Co.	Gas	
286	1,040	Frank McCarthy, No. 1	Monongahela Natural Gas Co.	do	
287	1,180	Mary McCarthy, No. 1	do	do	
288	1,060	Winnet McCarthy, No. 1	do	do	
289	1,160	Winnet McCarthy, No. 2	do	do	
290	1,295	W. McCosland, No. 1	Manufacturers' Light and Heat Co.		
291	1,170	Elizabeth Morton, No. 1	Monongahela Natural Gas Co.	Gas	
292	1,120	Elizabeth Morton, No. 2	do	do	
293	1,170	H. H. Richards, No. 1	Philadelphia Co	do	
294	1,140	Eli U. Ross, No. 1	Chartiers Oil Co	do	
295	960	Joseph Ross, No. 1		Dry	
296	1,260	Sam Ross, No. 1	Manufacturers' Light and Heat Co.	Gas	
297	1,040	John C. Sargent, No. 2	do		
298	1,190	Thompson	do		
299	1,135	Thompson & Seaman Coal Co., No. 1.	do	Oil	
300	870	W. H. Ulery, No. 1	Carnegie Natural Gas Co	Gas	Big Injun, Bayard
301	970	Effie Watson, No. 1	Philadelphia Co	do	Elizabeth
302	1,110	Wherry, No. 1	Carnegie Natural Gas Co	Dry	
303	895	John B. Wise, No. 1	Philadelphia Co	Gas	Bayard
304	905?	Mary S. Wise, No 2	do	do	
305	1,170	W. W. Worrells, No. 1	Monongahela Natural Gas Co.	do	
		West Pike Run Township.			
306	1,075	James M. Miller, No. 1	Greensboro Natural Gas Co.		
307	1,050	Peter Nickerson, No. 1	do	Dry	
308	1,210	S. F. Scott, No. 1	Fergus Oil Co		
309	1,050	Geo. Thompson, No. 1	Greensboro Natural Gas Co.		

sands in the Amity triangle—Continued.

or oil in the sand; † signifies known steel line measurement; L means that the elevation was determined were determined by aneroid barometer.]

Depth to—

Waynesburg coal.	Mapletown coal.	Pittsburg coal.	Upper Freeport coal.	Salt sand.	Big lime.	Big Injun sand.	Thirty-foot sand.	Gantz sand.	Fifty-foot sand.	Gordon Stray sand.	Gordon sand.	Fourth sand.	Fifth sand.	Bayard sand.	Elizabeth sand.
......	......	270	......	1,170	......	1,505	......	......	......	......	......	......	2,622	2,757	2,790
......	......	495	......	......	......	1,740	......	......	......	2,495	......	2,715	2,810	2,845	2,989
......	......	620	......	......	1,792	1,832	......	2,522	......	......	......	......	......	......	......
......	......	475	......	1,405	1,660	1,720	......	2,400	2,455	......	2,635	......	......	2,875	2,941
......	......	458	......	1,400	......	1,668	......	......	......	......	......	2,652	2,780	2,839	......
......	......	567	1,162	1,490	......	1,785	2,280	2,465	2,558	......	......	2,750	2,879	2,948	3,037
......	......	520	......	1,465	......	1,720	......	2,430	2,500	2,650	2,715	2,790	......	2,910	3,020
......	......	360	805	......	......	1,617	......	......	2,370	2,545	†2,570	2,710	2,769	2,860	......
......	......	524	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	380	......	......	......	......	......	2,275	......	......	......	......	2,585	......	......
......	......	755	......	......	......	......	......	......	......	......	......	......	......	......	......
130	......	454	......	1,407	1,640	1,690	2,255	2,376	2,455	......	......	2,662	2,746	2,862	2,954
......	......	481	1,231	1,420	......	1,715	2,310	2,395	2,445	......	2,695	2,820	2,862	2,972	......
......	......	645	......	1,550	......	1,875	......	......	2,635	......	......	......	......	3,025	3,137
......	......	485	......	1,385	......	1,735	2,295	2,395	2,425	......	......	2,635	......	2,854	2,900
......	......	605	1,350	1,530	......	1,830	......	2,520	2,560	2,735	2,800	2,880	......	2,993	3,087
......	......	585	......	1,518	......	1,720	......	2,468	2,503	2,603	2,680	2,715	2,765	......	......
......	......	605	1,360	1,570	......	1,850	......	2,550	2,592	2,800	2,845	2,910	......	3,000	3,105
......	......	520	......	1,460	......	1,785	2,865	2,450	2,520	......	2,735	2,816	2,865	2,920	3,008
......	......	620	......	1,580	......	1,870	......	......	......	......	......	......	2,991	......	3,117
......	......	423	......	......	......	1t400	......	2,300	2,335	......	......	......	......	......	......
50	......	365	......	......	......	......	......	......	......	......	......	......	......	......	......
......	......	542	......	1,480	1,655	1,715	2,300	2,434	2,469	2,585	2,612	2,644	2,723	......	......
180	......	520	......	1,435	1,665	1,730	......	2,375	2,495	2,680	2,725	2,790	2,840	2,922	2,991
......	......	495	......	1,492	......	......	......	......	2,422	......	......	......	......	......	......
240	......	580	1,170	1,500	1,732	1,795	2,405	2,485	......	......	......	......	......	......	......
......	......	290	......	......	1,480	......	......	......	......	......	......	......	......	2,760	......
......	......	396	......	......	......	1,632	......	......	......	......	2,375	......	2,748	2,790	2,883
......	......	475	......	......	1,557	1,655	2,180	......	2,410	......	......	......	......	......	......
......	......	290	......	......	......	1,525	......	......	......	......	2,485	......	......	2,759	......
......	......	338	......	......	......	1,577	......	......	......	......	2,520	......	2,641	2,727	2,817
......	......	615	......	1,414	......	1,865	2,425	2,525	2,555	......	2,733	......	......	2,904	3,114
......	......	355	......	......	1,490	1,575	2,190	2,260	2,304	......	......	......	......	......	......
......	......	259	865	......	1,412	1,497	......	......	......	......	......	......	......	......	......
170	......	516	1,090	......	......	1,750	......	......	......	......	......	......	......	......	......
......	......	......	......	......	......	1,490	......	2,210	2,250	......	......	......	......	2,660	......

COAL.

GENERAL STATEMENT.

Coal is destined to become the most important mineral resource of the Amity quadrangle. Owing to the depth of the principal seam below the surface, only a few mines are in operation at the present time, but the demand for coal is increasing with its exhaustion near the surface, and in time shafts will be sunk over much of the quadrangle and operations conducted on a large scale.

The principal coal beds outcropping in the quadrangle are the Pittsburg, Redstone, Sewickley (Mapletown), Waynesburg, Waynesburg "A," and Washington. The Pittsburg bed is the only one mined for shipment, but the Waynesburg is worked at many country banks, and one bank is known on the Redstone and several on the Sewickley seam. The Waynesburg "A" is probably worthless and the Washington coal is generally too poor to be of value under existing conditions. Several seams below the Pittsburg have been penetrated by the drill in search of oil and gas.

PITTSBURG COAL.

GENERAL STATEMENT.

The Pittsburg coal is the most valuable bed in southwestern Pennsylvania. From all the evidence obtainable it seems to be of workable thickness throughout the quadrangle and its quality is usually superior to that of the other coals of the region. The Pittsburg coal occurs at the base of the Monongahela formation, or Upper Productive Measures. (See columnar section, Pl. I, pocket.) Fig. 4 shows the total areal extent of the seam in Pennsylvania, together with the relative location of the Amity quadrangle. In this quadrangle the outcrop of the bed is only about 15 miles in length, but with the exception of the two small areas where it is cut by Chartiers and Peters creeks it is believed to underlie the entire district, a total area of 228 square miles. The average workable thickness of the bed being estimated at 6 feet and the specific gravity of Pittsburg coal in this region as 1.29,[a] the quadrangle contains 37,260,710,400 cubic feet,or 1,500,632,315 short tons (about 1,300,000,000 long tons). The coal has been estimated to underlie 833 square miles out of the total area of 858 square miles in Washington County.

The extent of the Pittsburg coal outcrop is shown on the geologic map (Pl. I, pocket) by the blue line at the contact of the Conemaugh and Monongahela formations. The outcrop of the coal follows both sides of Peters Creek below Venetia and of Chartiers Creek below McGovern, and the bed also reaches the surface at Meadowlands, where it outcrops at railroad level. Well records show that the bed is present in all parts of the quadrangle. West of Chartiers Creek it reaches nearly a mile up the tributary valleys between Meadowlands and Houston. On Peters and Chartiers creeks it can be developed by drifting, but in the greater part of the quadrangle it is far below the surface and can be reached only by shafts. At Washington it is about 450 feet below the valley, at Linden 250 feet, at Wylandville 350 feet, at Lone Pine 350 feet, at Ellsworth 270 feet, at Zollarsville 350 feet, at Sunset 550 feet, at Hackneys 500 feet, and at Tenmile village 400 feet. The method by which the approximate depth of this bed can be determined from the map is explained under the heading "Structure" (pp. 36–37), and its variation in level beneath the quadrangle is shown on the geologic map (Pl. I, pocket).

---

[a] The figure 1.29 is an average of the specific gravity of coal from three mines in the region, determined by the fuel-testing plant of the United States Geological Survey at St. Louis, Mo.

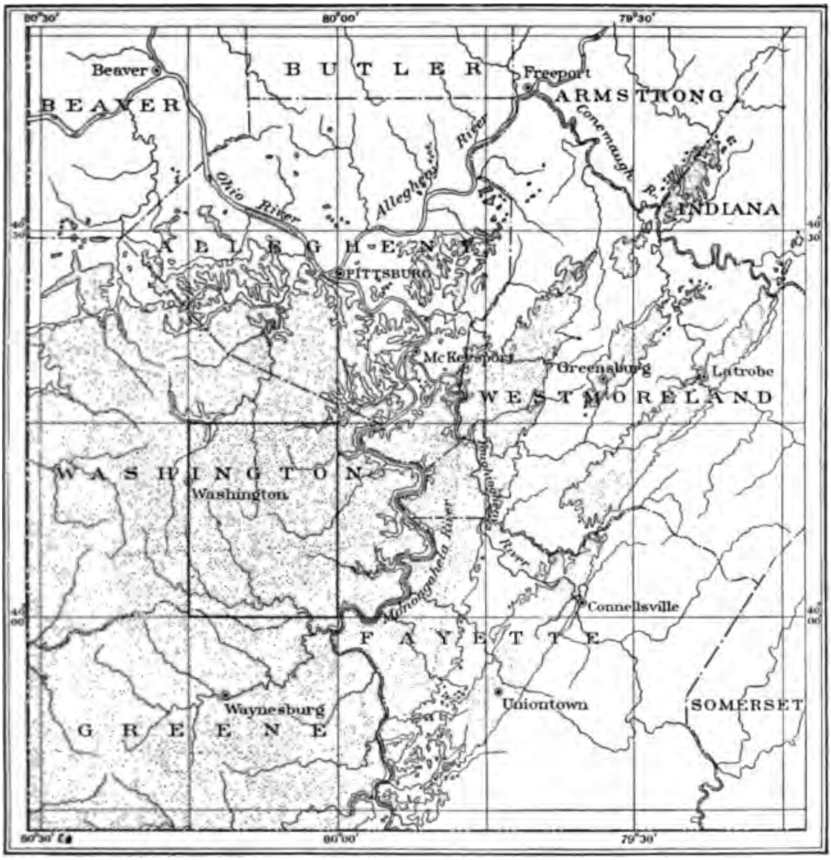


FIG. 4.—Map showing area of the Pittsburg coal bed in Pennsylvania.

MINING OPERATIONS.

In the Amity quadrangle there are 13 working mines, as follows: Ellsworth Nos. 1, 2, 3, and 4, Manifold, Meadowlands No. 1, Rich Hill, Allison, Boon, Blanche, Eclipse, Anderson No. 2, and Nottingham. The Manifold and Ellsworth mines are operated by shafts, Rich Hill and Meadowlands by slopes, and the rest by drifts. In addition to those named, the Enterprise mine, north of Washington, was formerly operated by a slope on the south side of Chartiers Creek and a 150-foot shaft at a point midway between the slope and Washington, but this mine is now abandoned. On the northwest bank of Chartiers Creek are situated the Rich Hill mine of the United Coal Company, the Meadowlands No. 1 of the Meadowlands Coal Company, and the Allison of the Pittsburg Coal Company. These mines are working a large area in Chartiers Township. The Boon mine at Canonsburg, the mouth of which is off the quadrangle northeast of Houston, also reaches inside the area. One mile south of Meadowlands, on a spur of the Pennsylvania Railroad recently built to it, is situated the Manifold mine, operated by the Patterson & Robbins Coal Company. Here two shafts have been sunk to the coal, 236 and 231 feet deep, respectively.

In the northeast corner of the quadrangle, on Peters Creek, are located the Blanche, Nottingham, and Eclipse mines of the Pittsburg Coal Company. These are operated by drifts. The old Anderson mine is located here, but is now abandoned. The Anderson No. 2 is being operated south of the creek.

On Pigeon Creek above Bentleyville are collieries Nos. 1, 2, 3, and 4 of James W. Ellsworth & Co. The coal is here deep below the surface and is reached by two shafts at Ellsworth and two at the village of Three and Four, 2½ miles farther up the creek, on South Branch. The shafts are 261, 279, 397, and 414 feet deep, respectively. This company is carrying on extensive operations and has built up-to-date plants and mining towns. Coal is shipped by means of a branch of the Pennsylvania Railroad running down Pigeon Creek and connecting with the main line at Monongahela City.

Opposite the Chestnut street station of the Pennsylvania lines at Washington a shaft was sunk many years ago to the Pittsburg bed. The coal was reported to be of excellent quality, but the shaft was abandoned on account of the extra expense involved in sinking the escape shaft.

THICKNESS.

The following table shows the average thicknesses of the coal in the various mines, together with the maximum and minimum measurements in each mine, in inches:

Thickness, in inches, of Pittsburg coal in the Amity quadrangle.

Mine.	Thickness.		
	Average.	Greatest.	Least.
Eclipse	62	64	60
Nottingham	57	60	54
Blanche	72	78	66
Boon	64	....	....
Allison	64	....	....
Meadowlands	64	....	....
Rich Hill	64	....	....
Ellsworth No. 1	72	74	70
Ellsworth No. 2	71	74	68
Ellsworth No. 3	73	76	70
Ellsworth No. 4	73	76	70

In the course of the field work several detailed sections were measured in various parts of the area. These measurements are given graphically in Pl. V. Except in a few places the bed is double, separated by a fire-clay parting of varying thickness. Here and there a third division is present, and in many places the bed is interrupted by other clay partings, but generally these are not persistent.

The roof division or portion above the clay parting is variable. In thickness it runs from 1 inch up to 4 feet. In some places it consists of a single bench, but more commonly is broken up into two or more benches, separated by shale or clay. The coal of this division is usually poor, containing a large proportion of ash.

The main clay separating the roof and lower divisions varies from a fraction of an inch up to 15 inches in thickness. The lower division of the Pittsburg coal varies in thickness from 3½ feet to 5 feet 10 inches and is the portion of the coal mined throughout this section of the field. The most characteristic feature of this division consists of two very persistent partings, which, as a rule, occur 2 to 3 feet from the bottom. They are known as the "bearing-in bands," and with the coal between them make up the "bearing-in coal." In few places are they over half an inch thick; commonly they are considerably thinner. The interval between them varies from 1 inch to 2½ inches. The name "bearing-in" has been applied because this bench is chosen by the miner as the easiest layer on which to work to undercut the overlying coal. The bearing-in coal is thrown out in mining. The bench is represented in all but two of the sections in Pl. V, and is probably present in the others, but was overlooked in taking measurements. In one country bank (section 5) the place of this bench is taken by fire clay. The bearing-in coal separates the lower division of the Pittsburg coal into two portions, the upper of which is known as the breast coal and the lower as the brick coal and bottom coal. The names applied to various portions of the Pittsburg coal are shown graphically in fig. 5.

In most regions the brick coal and bottom coal are distinct, separated by a thin binder, but in this quadrangle they can generally not be distinguished. In only one or two instances are other binders noted below the bearing-in coal, but in several cases nonpersistent binders have been noted above it.

The greatest thickness of coal known in the quadrangle is that recorded in the Moses Smith drill hole near Bissell, West Bethlehem Township, as shown in the following section (Pl. V, No. 1):

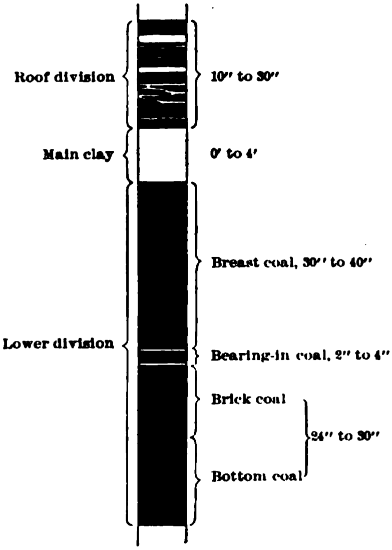


FIG. 5.—Generalized section of Pittsburg coal bed, with names of the various benches.

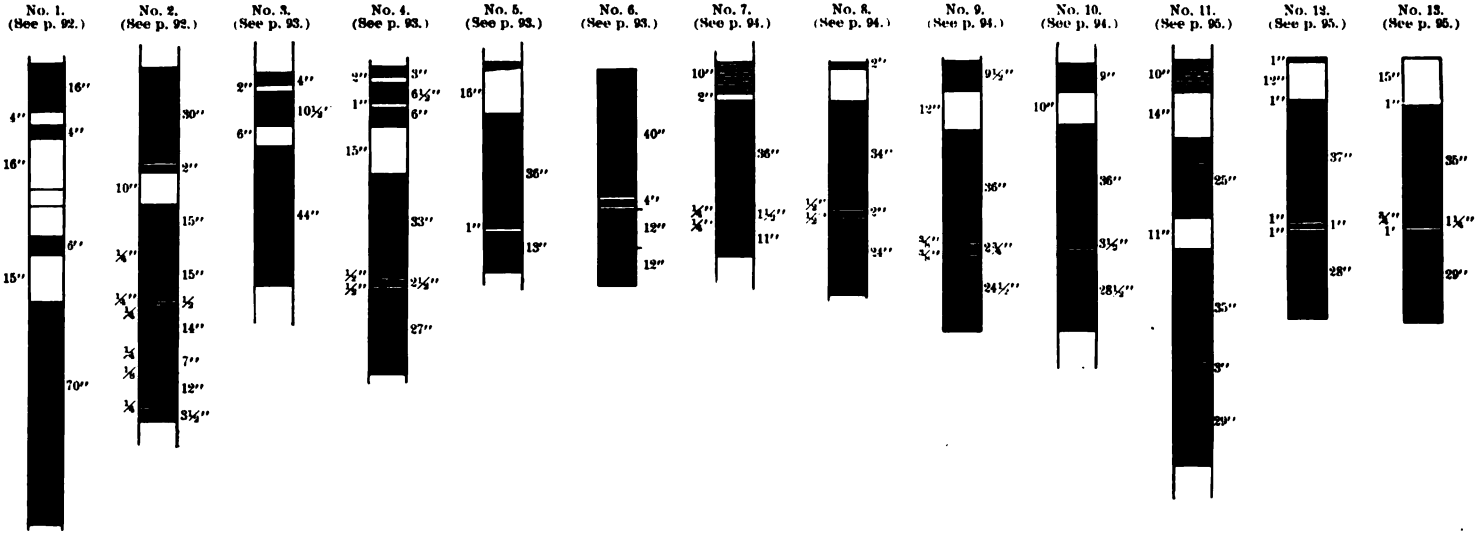
Section of Pittsburg coal near Bissell.

	Ft.	in.	Ft.	in.
Slate, black.				
Coal	*1*	*4*		
Slate, black				4
Coal		*4*		
Fire clay				5
Slate, black			1	4
Coal		*6*		
Slate			1	3
Coal, breast and *bottom*	*5*	*10*		
Slate, bottom.				
Total coal	8			

Sections 2 to 9, inclusive, Pl. V, show the characteristics of the coal in various parts of Chartiers Valley. The lower division in this valley is from 4 feet 2 inches to 5 feet 10 inches thick, the main clay from 2 to 22 inches. The upper division runs from 2 inches to 2½ feet and varies from clean coal to very bony. The bearing-in bands occur a little below the middle of the lower division. Local thin partings occur in all the mines, and therefore when a published section of the coal shows a parting other than those noted above it must be regarded as exceptional and not representing general conditions. The measurements of the known sections in Chartiers Valley are as follows:

Coal section at the Manifold mine (Pl. V, No. 2).

	Ft.	in.
Coal	2	6
Shale		1
Coal		2
Fireclay		10
Coal	1	3
Binder		½



SECTIONS OF PITTSBURG COAL IN AMITY QUADRANGLE.

Scale, 1 inch to 5 feet.

Coal section at the Manifold mine—Continued.

		Ft.	in.
Coal		1	3
Bearing-in coal	Binder		¼
	Coal		½
	Binder		¼
Coal with several thin binders		3	2
		9	4¼

Coal section at "McLain's bank," 0.9 mile west of Meadowlands (Pl. V, No. 3).

	Ft.	in.
Shale roof		
Coal		4
Shale		2
Coal		10½
Fire clay		6
Coal	3	8
	5	6½

Coal section at the Meadowlands mine (Pl. V, No. 4).

		Ft.	in.
Coal			3
Shale			2
Coal			6½
Shale			1
Coal			6
Shale and fire clay		1	3
Coal		2	9
Bearing-in coal	Parting		½
	Coal		2½
	Parting		½
Coal		2	3
		8	1

Coal section 1.3 miles north of Meadowlands (Pl. V, No. 5).

	Ft.	in.
Bony clay		2
Fire clay	1	4
Coal	3	
Fire clay		1
Coal	1	1
Fire clay		
	5	8

Coal section at the Allison mine (Pl. V, No. 6).

[Second Geol. Survey Pennsylvania; Rept. K, p. 233.]

	Ft.	in.
Coal	3	4
Bearing-in coal		4
Brick coal	1	
Lower bottom coal	1	
	5	8

Coal section 0.5 mile south of Houston (Pl. V, No. 7).

		Ft.	In.
Bony coal			10
Fire clay			2
Coal		3	
Bearing-in coal	Clay		¼
	Coal		1½
	Clay		¼
Coal			11
Fire clay.			
		5	1

Coal section 0.3 mile east of Houston (Pl. V, No. 8).

		Ft.	In.
Sandy shale.			
Coal			2
Fire clay			10
Coal		2	10
Bearing-in coal	Parting		½
	Coal		2
	Parting		½
Coal		2	
		6	1

Coal section reported at Boon mine, northeast of Houston (Pl. V, No. 9).

		Ft.	In.
Coal			9½
Clay			1
Coal		3	
Bearing-in coal	"Slate"		⅜
	Coal		2¾
	"Slate"		⅜
Coal		2	½
		6	2½

On Peters Creek the thickness of the lower division is 5½ to 6 feet and of the upper division 6 to 12 inches. The clay averages a little less than a foot in thickness. In the Nottingham mine a still higher bench is reported, 14 inches above the upper division; but this topmost bench is very bony. Two sections measured in this district are as follows:

Coal section at the Blanche mine (Pl. V, No. 10).

	Ft.	In.
Roof coal		9
Fire clay		10
Coal	3	
Bearing-in coal		3½
Coal	2	4½
	7	3

Coal section at the Nottingham mine (Pl. V, No. 11).

	Ft.	in.
Coal and bone		10
Fire clay and shale	1	2
Coal with thin partings	2	1
Fire clay		11
Coal	2	11
Bearing-in coal		3
Coal	2	5
	10	7

At the Ellsworth the average thickness of the lower division of the coal is about 6 feet. Two typical sections measured as follows:

Coal sections at the Ellsworth Collieries (Pl. V, Nos. 12 and 13).

		Ellsworth No. 1. Ft.	Ellsworth No. 1. in.	Ellsworth No. 2. Ft.	Ellsworth No. 2. in.
Bony coal			1		
Fire clay		1		1	3
Bony coal			1		1
Coal		3	1	2	11
Bearing-in coal	Shale		1		¾
	Coal		1		1¼
	Shale		1		1
Coal		2	4	2	5
		6	10	6	11

QUALITY.

In quality the Pittsburg bed in Washington County is fair for a bituminous coal. During the field work for this report a number of samples of the coal were taken and sent for analysis to the fuel-testing plant of the United States Geological Survey at St. Louis. Each one of these samples was obtained by cutting a section 2 inches thick from roof to floor across as much of the seam as is mined for shipment, all partings not included by the miner being thrown out. The sample was then thoroughly mixed and quartered to the bulk desired, sealed in an air-tight can, and mailed to the chemical laboratory at St. Louis.

All analyses of the Pittsburg coal given here include only the lower division, or portion mined for shipment. The bearing-in coal is excluded, as it is generally thrown out in mining.

Analyses of Pittsburg coal on Chartiers and Peters creeks.

[E. E. Somermeier, analyst.]

	1.	2.	3.	4.
Moisture	1.90	1.37	1.70	1.72
Volatile matter	36.20	37.10	37.20	36.98
Fixed carbon	53.70	53.84	55.83	56.55
Ash	8.20	7.69	5.27	4.75
	100.00	100.00	100.00	100.00
Sulphur	1.52	1.61	1.13	1.15
Calories			7,964	
British thermal units			14,335	

1. McLain's country bank, near Meadowlands.
2. Manifold mine, south of Meadowlands.
3. Blanche mine, Peters Creek.
4. Nottingham mine, Peters Creek.

These four analyses show a fair agreement. The fixed carbon and sulphur are moderate and the ash is low, but more variable.

At the Ellsworth collieries four samples have been taken, the first from each mine being taken by the writer of this report and the second from each mine by Messrs. Groves and Von Borries, of the fuel-testing plant.

Analyses of Pittsburg coal from the Ellsworth collieries.

[E. E. Somermeier, analyst.]

	No. 1.		No. 2.	
Loss of moisture, air dried		1.50		1.50
Moisture	1.22	2.91	1.05	3.01
Volatile matter	36.28	33.70	36.65	33.46
Fixed carbon	56.24	57.99	57.25	58.70
Ash	6.26	5.40	5.05	4.83
	100.00	101.50	100.00	101.50
Sulphur	.84	1.08	.91	.73
Calories				7,915
British thermal units	14,247			14,197

These analyses show an improvement on the quality of the coal farther north and west. It is fairly low in sulphur and averages slightly higher in fixed carbon. The proportion of ash averages about the same. This coal would seem to be worth coking.

The average composition of the coal in the quadrangle, based on the foregoing eight analyses, is as follows:

Calculated average composition of Pittsburg coal in the Amity quadrangle.

Moisture	1.86
Volatile matter	35.95
Fixed carbon	56.26
Ash	5.93
	100.00
Sulphur	1.12

In a report on "run of mine" made to James W. Ellsworth & Co., by Doctor Bogdahn, chief chemist of the United Coke and Gas Company, Otto, Allegheny County, Pa., analyses of dry coal and of crucible-made coke from the Ellsworth mines are given. The compositions were as follows:

Analyses of dry coal from Ellsworth collieries and of coke made in a crucible from the same coal.

	Coal.	Coke.
Volatile matter	37.92	1.08
Fixed carbon	57.72	92.35
Ash	3.69	5.96
Sulphur	.67	.61
	100.00	100.00
Phosphorus	.0032	.0051

A comparison of this coal analysis with those on page 96 made by the United States Geological Survey shows lower ash and sulphur than the other samples, indicating that this is probably picked coal and that the analysis may be taken as representative of tne best coal in the quadrangle.

In addition to these analyses, several others have been gathered from miscellaneous sources and are given in the following table. In several cases where analyses were made years ago it is not known whether or not the locality is inside the quadrangle, but the name of the township indicates the probability that it is within the area or close to its borders.

Analyses of Pittsburg coal from the Amity quadrangle and vicinity.

	1.	2.	3.	4.	5.	6.	7.	8.
Moisture	0.775	1.095	1.010	1.540	1.080	1.425	....	....
Volatile matter	36.770	39.790	40.995	37.825	40.350	36.880	30.75	32.75
Fixed carbon	51.467	55.033	48.769	57.063	50.311	56.829	59.98	55.51
Ash	8.890	2.910	7.020	2.810	5.665	4.070	8.37	10.76
Sulphur	....	1.172	2.206	.726	2.594	.796	.89	98
Phosphorus	....	....	....	....	....	....	.01	.005
	97.902	100.000	100.000	99.964	100.000	100.000	100.00	100.005
Coke	62.455	59.115	57.995	60.365	58.570	61.695	....	....
Color of ash	....	....	Red.	....	Red.	Cream.	....	....

1. Patterson's bank, East Bethlehem Township. This includes only the "roof coal." (Stevenson, J. J., Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 381; analyzed by D. McCreath.)
2. T. Thompson's bank, Chartiers Township. (Loc. cit.; analyzed by D. McCreath.)
3. P. Ashurst's bank, Chartiers Township. (Loc. cit.; analyzed by D. McCreath.)
4. Harding and Warrick, South Strabane Township. (Loc. cit., analyzed by A. S. McCreath.)
5. Peters Township. (Loc. cit.; analyzed by A. S. McCreath.)
6. Liddell's bank, East Bethlehem Township. (Loc. cit.; analyzed by A. S. McCreath.)
7. Moses Smith diamond-drill hole, West Bethlehem Township; "breast coal" only. (James W. Ellsworth & Co.; analyzed by Wuth & Stafford, Pittsburg.)
8. W. H. Ulery diamond-drill hole, West Bethlehem (?) Township; "breast coal." (James W. Ellsworth & Co., analyzed by Wuth & Stafford.)

From these analyses it will be seen that the sulphur is one of the most variable constituents of the Pittsburg coal in this quadrangle. In the northern and western parts of the area it seems to be generally moderate, but in one instance in Peters Township it runs as high as 2.594 and at one bank in Chartiers Township it reaches 2.206, according to the Second Geological Survey. The present survey makes the maxima 1.15 and 1.61 in these districts. It is improbable that the coal will be of much value for gas or coking in those portions of the quadrangle, unless the sulphur can be reduced by washing to less than 1 per cent; but it ought to be a first-class steam coal.

Samples from the Ellsworth mines and Nos. 6, 7, and 8 of the table from the southeastern quarter of the quadrangle show sulphur ranging from 0.67 to 0.98, indicating a better quality in this direction. It seems probable that in time the coal may be coked in this portion of the quadrangle. In general it may be said that the quality of the Pittsburg coal improves toward the east and deteriorates westward from the quadrangle, becoming poorest in Ohio.

METHODS OF DEVELOPMENT.

As the Pittsburg coal in this quadrangle outcrops in only two localities where it is now mined, it must be developed principally by shafts, as has been done by the Ellsworth Company on Pigeon Creek. This company has sunk shafts at two localities near the bottom of the Waynesburg syncline, thus taking a position where the mines may be easily drained by the natural inclination of the coal to the foot of the shaft, from which the water may be pumped to the surface. As the valley of Pigeon Creek has gentle grades, it has been a simple matter to connect the mines with the Monongahela branch of the Pennsylvania Railroad by a line running to Ellsworth. Between Three and Four and the crest of the Amity anticline is an area 3 miles broad along South Branch of Pigeon Creek, 3½ miles broad on Center Branch, and 4 miles broad on North Branch of Pigeon Creek, in which the dip is toward the southwest. This gives a large area in which the Pittsburg coal can be advantageously mined by shafts sunk on the main branches of Pigeon Creek. Short switches will connect with the Ellsworth branch railroad.

On Peters Creek in the northeast corner of the quadrangle most of the mines are rather unfavorably situated in relation to the structure, as their proximity to the crest of the Amity anticline makes it necessary to mine down the dip. A more satisfactory method of developing the coal lying between Peters and Mingo creeks would be to sink shafts along Mingo Creek near the edge of the quadrangle and mine northward up the dip as far as the limit of the Peters Creek workings and westward as far as the crest of the anticline, which crosses Mingo Creek near Kammerer. Near the edge of the quadrangle a shaft less than 100 feet deep would reach the coal. The railroad might even be continued 3 miles or so beyond this to the source of the Mingo Creek drainage, and in the area between Gilkeson and Kammerer shafts could be sunk and operations pushed east and northeast up the dip to meet the workings on the eastern flank of the axis. A small area south of Mingo Creek could also be opened up from the shafts along its course, but as the Amity anticline pitches to the southwest, most of the region lying south of the Williamsport pike can probably be more economically worked from shafts located on North Branch of Pigeon Creek.

At the point where the axis of the Nineveh syncline crosses Little Chartiers Creek, near Linden, the Pittsburg coal lies between 200 and 250 feet below the surface, and this is probably the most favorable location in this valley for a shaft. From it a large area both east and west of the syncline can be mined and easily drained, and the coal can be conveniently hauled by connecting with the Baltimore and Ohio Railroad at Gambles or with the Pennsylvania lines near Morganza, 3½ miles to the north.

Probably the next favorable point in the valley of Little Chartiers Creek for sinking a shaft lies on the axis of the syncline one-half mile west of Clokeyville station. The depth of shaft necessary to reach the coal will be about 400 feet, but as the mine would be situated on the main line of the Baltimore and Ohio Railroad no branches would be necessary. From this point the coal can be mined up the dip in every direction except toward the south. The area lying between Mount Pleasant and Clokeyville can probably be best developed by sinking a shaft at the head of the small valley about 1 mile west of Mount Pleasant. The depth to the coal here is supposed to be between 600 and 650 feet.

In order to develop the coal in the southern half of the quadrangle a railroad must be built into the valley of Tenmile Creek. The line can be connected with the Monongahela branch of the Pennsylvania Railroad at West Brownsville, about 18 miles below Zollarsville, with the Ellsworth branch by tunneling from Daniels Run to South Branch of Pigeon Creek, or with the Baltimore and Ohio Railroad by a branch line ascending Little Chartiers Creek south of Eightyfour and descending Brush Run to Lone Pine, whence branches could be run both up and down stream.

In the valley of Tenmile Creek and its tributaries many favorable points for shafts can be found. The axis of the Waynesburg syncline crosses Daniels Run 1½ miles from its mouth and Tenmile Creek three-fourths of a mile below Bissell, and shafts at these points ought to reach the coal at about 380 and 470 feet, respectively. From such shafts entries could be driven to the north, east, and west; but as the Waynesburg syncline is here pitching toward the south, the coal south of Tenmile Creek can probably be taken out better from a somewhat deeper shaft sunk near the head of Patterson Run or on Craig Run or Craynes Run in Greene County. Most of the coal in the borough of Deemston can be mined from shafts which will doubtless be sunk on Plum Run, along which the depth of the coal varies from 190 feet at the mouth of the run to 430 feet near its head. Below Plum Run on Tenmile Creek the coal approaches the surface. It is probable that the eastern part of the borough of Deemston can be best developed from the heads of the valleys in the vicinity of Deemston. The depth of shaft necessary in the two valleys west of Deemston will be about 350 feet and on Fishpot Run east of Deemston 250 to 300 feet, according to exact location.

In the southwestern quarter of the quadrangle almost any point along Tenmile or Little Tenmile Creek or their larger tributaries is suitable for shaft locations, but no shaft should be sunk within a mile or so of the point where the Amity anticline crosses Tenmile Creek 1¼ miles east of Hackneys. Along this creek between Bissell and Hackneys the coal will probably be reached between 440 and 480 feet below the surface; and mining can be conducted with good drainage in every direction except toward the south. The area south of the creek can probably be best developed by working northward from near the heads of Craynes and Boyd runs and Ruff Creek in Greene County, thus working up the dip.

On Bane Creek the coal descends from 450 feet below the surface at its mouth to about 720 feet in the bottom of the Nineveh syncline near McCracken station. Between Hackneys and Sunset workings can be carried east of the creek to the limit of a profitable haul, but as the strike here is about parallel to the creek, the area west of the creek should be mined from shafts situated farther west, in some of the side valleys. Above Sunset the strike of the rocks is more nearly at right angles to the creek and hence mining can be conducted both east and west of the creek in this part of the area. A shaft about 700 feet deep sunk on the axis of the syncline near McCracken could mine in all directions with every advantage. By referring to the map it will be seen that the Waynesburg and Washington Railroad follows Bane Creek northward from Hackneys to its source and thence climbs over the hills to Washington. This railroad is a narrow-gage line with steep grades and hence can not now be used for hauling coal; but if it should be rebuilt on a broad gage and connected with the Monongahela Valley by way of Tenmile Creek, it would furnish an outlet for the coal in this region.

On Little Tenmile Creek the coal is nearest the surface near Lone Pine, where its depth is about 330 feet. From this point the bed descends in both directions to about 470 feet below the surface at the mouth of the Creek and probably about 630 feet below the surface in the bottom of the Nineveh syncline along the creek northwest of Lowland. No shafts should be sunk near Lone Pine, as this place is on the axis of the anticline, but a favorable locality for operations would be at the mouth of Potato Run or Shipe Run, 1 to 1½ miles above Lone Pine, or about the same distance downstream. At the mouth of Shipe Run the coal is believed to lie about 400 feet deep and below Lone Pine it is known by a well record to be within 340 feet of the surface. Perhaps this is the most favorable locality for operations on Little Tenmile Creek, but owing to the deflection in the strike of the beds here economical operations can be carried on only to the northeast, north, and west. The greatest area of most profitable mining can be obtained by sinking shafts on the Nineveh axis in any of the small valleys above Lowland.

In developing the coal of any section the location and direction of operations will necessarily be guided by the boundaries of the land controlled by various companies and individuals, and the conditions influenced by such control must be met accordingly. After the coal has been "mined out" in the most favorable areas, intervening unworked tracts will remain, the development of which must be undertaken according to various local conditions. It is probable that within one hundred years little Pittsburg coal will remain in this region.

In case the Upper Freeport coal is proved to be of value, this bed can be mined in connection with the Pittsburg seam, by sinking the shafts 600 feet deeper.

REDSTONE COAL.

The next bed above the Pittsburg is the Redstone, which in the Monongahela Valley is a coal of some importance. It is a promising bed in the northeastern part of this quadrangle, but in other portions of the area it is little known.

THICKNESS.

The Redstone coal lies from 20 to 80 feet above the Pittsburg seam. At several points in the vicinity of Hackett and Finleyville it has been opened in country banks, and in one instance a thickness of 40 inches was measured, as shown in fig. 6, section 21. This was at a bank directly above the Nottingham mine. The interval to the Pittsburg seam here is 70 feet. This coal may possibly be the Sewickley, but the interval from the Sewickley to the Pittsburg is usually as much as 110 to 150 feet, and is rarely known to be less than 100 feet. About 2¼ miles northwest of Meadowlands a blossom of the Redstone occurs at an estimated interval of about 60 feet above the Pittsburg. Coal is reported in the Enterprise shaft, 20 feet above the Pittsburg bed and

75 feet below the Sewickley, but this may be the rider coal which is common throughout much of the Monongahela Valley. The reported thickness here is 2 feet 6 inches, and in the air shaft near by there is 4 feet of it.

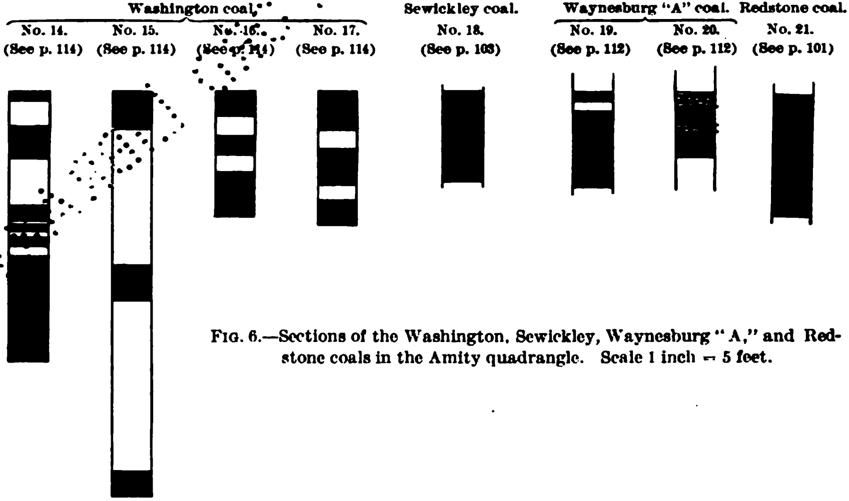


FIG. 6.—Sections of the Washington, Sewickley, Waynesburg "A," and Redstone coals in the Amity quadrangle. Scale 1 inch = 5 feet.

QUALITY.

One sample of the Redstone coal has been analyzed. It was taken from the bank above the Nottingham mine in the same way as the samples of the Pittsburg coal (see p. 95), and was analyzed at the fuel-testing plant at St. Louis. The composition is as follows:

Analysis of Redstone coal from country bank near Hackett.

Moisture	1.46	Sulphur	2.05
Volatile matter	35.56		
Fixed carbon	53.39		
Ash	9.59		
	100.00		

This analysis indicates a coal of fairly good quality, ranking the Redstone in this region next in value to the Pittsburg. The quantity of fixed carbon is high, the percentage of ash only slightly exceeds that in the Pittsburg, and the amount of sulphur is not extreme.

An analysis from I. Teeple's bank near Monongahela, east of the quadrangle, is given for comparison[a].

---

[a] Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 379.

Analysis of Redstone coal from bank near Monongahela.

[A. S. McCreath, analyst.]

Moisture	1.060	Percentage of coke	65.350
Volatile matter	33.590	Color of ash, gray.	
Fixed carbon	48.688		
Ash	14.295		
Sulphur	2.367		
	100.000		

SEWICKLEY COAL.

The Sewickley coal is frequently reported in well records at distances varying from 100 to 150 feet above the Pittsburg coal and near the base of the Benwood limestone. To the drillers it is universally known as the "Mapletown coal," the name coming from Mapletown, Greene County, where the bed is mined. In some parts of Greene County it is a valuable coal, but in the Amity quadrangle little is known regarding it.

THICKNESS AND INTERVALS.

On Mingo Creek, near the boundary between Carroll and Nottingham townships, this coal has been opened at two country banks. A measurement at one of these gave 28 inches of clean coal, with a fireclay roof (fig. 6, section 18). This coal appears in blossoms at several points within a distance of 1½ miles up the main branch of this creek and 2½ miles up the run entering Mingo Creek from the northwest. At a number of points in the vicinity of Hackett and Finleyville a good coal has been opened at country banks 50 to 80 feet above the Pittsburg, and this may possibly be the Sewickley; it is, however, considered as more probably the Redstone. In the northwestern part of the quadrangle the Sewickley is extremely thin. In the Enterprise shaft only 3 inches was found, and in the Washington shaft it is missing.

The Sewickley coal is reported in a number of wells drilled in the quadrangle for oil and gas, and in order to show the intervals and thickness these are tabulated on the next page.

Data regarding Sewickley (Mapletown) coal as reported in drill records.[a]

No. on Pl. I.	Name.	Location.	Depth below surface.	Distance above Pittsburg coal.	Thickness.
			Feet.	*Feet.*	*Feet.*
56	Bristor, No. 3	Morris Township, Greene Co.	....	148	....
122	James Thomas	Nottingham Township	230	102	5
	Horn heirs	Morgan Township	345	120	....
24	A. B. Crumrine	Borough of Deemston	85	123	4
45	J. L. Thompson, No. 2	.....do	410	96	5
23	N. T. Clark, No. 1	.....do	315	105	6
31	Mrs. A. L. Hawkins, No. 1	.....do	298	127	....
15	Luse	Borough of Bealisville	318	116	2
	Average			117	

[a] All measurements given in this report, unless otherwise stated, are from top to top of the respective beds.

QUALITY.

No analyses have been made of the Sewickley coal in the Amity quadrangle, but Stevenson in his report[a] gives three analyses from the southeastern part of Greene County. These are as follows:

Analyses of Sewickley coal from Greene County.

	1.	2.	3.
Moisture	1.790	1.500	1.088
Volatile matter	35.400	30.428	34.012
Fixed carbon	56.818	55.038	51.783
Ash	4.840	11.628	10.856
Sulphur	1.152	1.406	2.261
	100.000	100.000	100.000
Percentage of coke	62.810	68.072	64.900
Color of ash	Gray.	Red gray.	Red gray.

1. Dunkard Township. Analyzed by D. McCreath.
2. Near Mapletown, Monongahela Township; upper bench. Analyzed by S. A. Ford.
3. Near Mapletown, Monongahela Township; lower bench. Analyzed by S. A. Ford.

The proportion of ash is generally large, but the coal is reported to burn freely and to be marketable. In West Virginia it is a valuable coal.

UNIONTOWN COAL.

The Uniontown coal is a bed occurring at an average interval of 230 to 260 feet above the Pittsburg and 40 to 80 feet below the Waynesburg, just above a characteristic yellow limestone. It is present in many places as a distinct blossom, but is everywhere thin and is not persistent in this quadrangle.

---

[a] Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 379.

WAYNESBURG COAL.

The Waynesburg bed is best developed in Greene County, but has a wide distribution. It can nearly always be recognized by the presence of a coarse, flaggy sandstone, 20 to 60 feet thick, which generally outcrops directly above. Although locally missing, this sandstone accompanies the coal over wide areas. In some places they are separated by a few feet of a black shale, but in this quadrangle the shale is more commonly absent.

INTERVALS.

The stratigraphic position of the Waynesburg coal is at the top of the Monongahela formation, at distances varying from 290 to 350 feet above the Pittsburg. This interval in a general way diminishes from Fayette toward western Washington County; but within the limits of the Amity quadrangle there seems to be no uniformity in variation in any particular direction. The minimum interval known is 292 feet in North Franklin Township, and the greatest is 355 feet in East Bethlehem Township; but intervals of 340 to 350 feet occur in South Strabane, Somerset, West Pike Run, and West Bethlehem townships, and in Morris Township, Greene County. The following table includes all available well records in the quadrangle in which the two coals are reported. The intervals are measured from the tops of the respective coals, and the thickness of the Monongahela formation can therefore be approximately determined in each instance by the addition of 6 to 10 feet for the thickness of the Pittsburg coal.

Distance between Pittsburg and Waynesburg coals in Amity quadrangle, as shown by drill records.

No. on Pl. I.	Name of well.	Location.	Distance.	Thickness of Waynesburg coal.
			Feet.	*Feet.*
3	**Baker**	Amwell Township	337	....
	Moses Smith diamond drill	do	323	6
14	**Mrs. A. L. Hawkins No. 2**	Borough of Beallsville	333	3
15	**Eaton Luse heirs No. 1**	do	322	3
23	**N. T. Clark No. 1**	Borough of Deemston	330	4
32	**Mrs. A. L. Hawkins No. 3**	do	333	3
34	**L. V. Martindale No. 2**	do	330	4
44	**J. L. Thompson No: 1**	do	310	2
45	**J. L. Thompson No. 2**	do	356	5
46	**J. L. Thompson No. 3**	do	335	6
47	**J. L. Thompson No. 4**	do	337	4
48	**J. L. Thompson No. 5**	do	330	3
54	**Blakely No. 1**	East Bethlehem	355	....
56	**Bristor Bros. No. 3**	Morris Township, Greene County.	345	....
62	**Elmas Carey No. 1**	Morris Township, Washington County.	314	5
	Meloy No. 1	do	311	5
	J. C. Mounts	North Franklin Township	292	....

Distance between Pittsburg and Waynesburg coals in Amity quadrangle, as shown by drill records—Continued.

No. on Pl. I.	Name of well.	Location.	Distance.	Thickness of Waynesburg coal.
			Feet.	*Feet.*
234	Washington Floral Co	South Strabane Township	345	3
273	N. T. Clark No. 2	West Bethlehem Township	334	4
285	J. C. Martin No. 1	do	324	4
295	Joseph Ross No. 1	do	315	
297	John C. Sargent No. 2	do	340	5
299	Thompson and Seaman Coal Co. No. 1.	do	340	5
308	S. F. Scott No. 1	West Pike Run Township	346	
	Average		332	

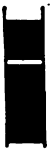
DISTRIBUTION.

The outcrop of the Waynesburg coal horizon is shown on the geologic map (Pl. I, pocket) by the blue line at the contact of the Monongahela and Washington formations. The dash portion of the line indicates doubt whether the coal is workable and the dotted part shows places where it is probably too thin to be of value. It will be seen that over the northeastern quarter of the quadrangle the coal outcrops near the top of the hills. This is also true east of Zollarsville and south of Beallsville. Throughout these areas the bed seems to be uniformly present and has been opened at a great many country banks.

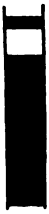
From Nottingham and Somerset townships toward Chartiers Creek, however, the seam decreases in importance. It outcrops over a considerable area in the valley of Little Chartiers Creek north of Eightyfour, and between Wylandville and the edge of the quadrangle several country banks have been opened at various times. The horizon follows the eastern side of Chartiers Creek high up on the hills, but in that district the coal is not known to be of value and may be absent in much of the area. In the Enterprise shaft, north of Washington, it is only 3 inches thick, and in the Washington shaft only 8 inches. At Lone Pine, where it is brought up by the Amity anticline, it shows for a short distance, and here it has been extensively mined at several country banks. With this exception the bed lies deep beneath the surface throughout the entire area south of Washington and Eightyfour and west of Odell and Zollarsville. The depth below creek level is about 200 feet at Sunset and 100 to 150 feet between West Amity and Tenmile village.

The probable depth of the Waynesburg coal at any point in the quadrangle can be found by adding the corresponding interval (300 to 350 feet) to the elevation of the Pittsburg coal as shown by the structure contours and then subtracting the sum from the surface ele-

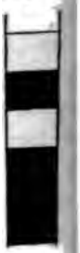
No. 22.
(See p. 108.)



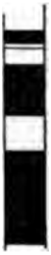
No. 23.
(See p. 108.)



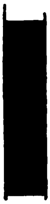
No. 24.
(See p. 108



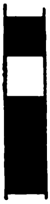
No. 36.
(See p. 108.)



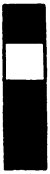
No. 37.
(See p. 108.)



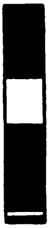
No. 38.
(See p. 108.)



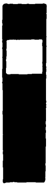
No. 39.
(See p. 108.)



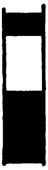
No. 40.
(See p. 108.)



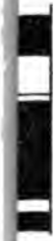
No. 41.
(See p. 108.)



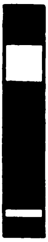
No. 42.
(See p. 108.)



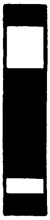
o. 54.
p. 111.)



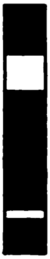
No. 55.
(See p. 111.)



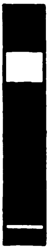
No. 56.
(See p. 111.)



No. 57.
(See p. 111.)



No. 58.
(See p. 111.)



vation at the point in question. The approximate interval to be added can be estimated in various portions of the quadrangle by means of the table on pages 105–106. Where no measurements have been made in the vicinity the average interval should be used.

THICKNESS.

In thickness the Waynesburg coal is variable, running from a few inches to 7 feet. Like the Pittsburg bed, it usually occurs in more than one bench, separated by clay partings. In general there are three persistent benches of coal. This is illustrated in Pl. VI. With few exceptions the upper fire-clay parting is persistent, with an average thickness of 1 foot, occurring in general a little nearer to the top than to the bottom of the seam. The bench directly below this is the one most commonly mined.

Along the several branches of Pigeon Creek many country banks have been opened on this bed, and these show sections varying from 3 to 7 feet in thickness (Pl. VI, sections 22 to 42). The table on the next page gives the exact measurements of these.

Detailed measurements of the Waynesburg coal in the valley of Pigeon Creek.[a]

No. of section on Pl. VI.	Location.	Reference.	Fire clay.		Coal.		Fire clay.		Coal.		Fire clay.		Coal.		Total.	
			Ft.	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*
22	Kammerer opening		(b)		1			2	2						3	2
23	2 miles southeast of Kammerer		(b)			[c] 3		[c] 9	3	11					4	11
24	0.8 mile southeast of Emery		[b] 1		1		1		2	6					5	6
25	0.8 mile northwest of Bentleyville				1		1		2	8	1		1	3	[d] 6	11
26	"A. Hetherington bank,' North Branch Creek	Second Geol. Surv Pa., Rept. K, p. 218.				11	1	1	[e] 2	7		2	1	2	5	11
27	"H. Myers bank,' North Branch Pigeon Creek	do			1	3	1	2	2	10		5	1	4	7	
28	"Couch bank," North Branch Pigeon Creek	do			1	2	1		2	10		6	1	3	6	9
29	"B. Emery bank," North Branch Pigeon Creek	Second Geol. Surv. Pa., Rept K, p. 219.				10	1	2	2	8		8	1	4	6	8
30	"Joseph Scott bank," 1 mile above Bentleyville	Second Geol. Surv. Pa., Rept. K, p. 217.				3	1	2		3		½		7	2	3½
31	"Shaner bank," near Bentleyville	do			1	2	1	2	1	10		2	1	6	5	8
32	"J. Huffman bank," Center Branch Pigeon Creek	do				10	1	3	3			½	1		6	1½
33	"J. J. Huffman bank," Center Branch Pigeon Creek	do			1		1		3	4	1			6	5	11
34	"Burger bank," Center Branch Pigeon Creek	do			1		1	3	3	6	2		2	2	8	1
35	0.3 mile southeast of Ellsworth		(b)			8	1	1	2+						3	9+
36	1.8 miles east-northeast of Scenery Hill					3½		7½	1	4		11	2	5	5	7
37	0.3 mile south of Vanceville (lower opening)												4	6	9	1+
38	0.3 mile south of Vanceville (upper opening)				1		1	1	2	6+						
39	"S. Tombaugh bank," South Branch Pigeon Creek	Second Geol. Surv. Pa., Rept. K, p. 148.			1		1		2			½		3	4	3½
40	"Whitfield bank," South Branch Pigeon Creek	do			1	11	1	3	2	3		2		2	5	9
41	"D. M. Letherman bank," South Branch Pigeon Creek	do				10	1		2	6		1		2	4	7
42	1.7 miles southeast of Vanceville		(b)			6	1	6	1	10					3	10

[a] See graphic representations on Pl. VI.

[b] Sandstone rock.

[c] With some fire clay.

[d] Contains clay partings.

[e] Slate.

In general these sections show a fair agreement, having a main bench and an upper bench ("roof coal"), separated by 6 to 18 inches of fire clay. The "roof coal" varies in thickness from 3 to 23 inches, the main bench from 22 to 47 inches. The maximum measurement of the main bench is at a country bank 2 miles southeast of Kammerer (Pl. VI, section 23). The roof is generally sandstone, but here and there shale, and in one instance the coal is separated from the sandstone by a foot of fire clay.

The lower of the two partings occurs from 2 inches to 2 feet above the bottom of the seam and in extreme cases measures a foot. The fact that the lower bench has not always been recorded is doubtless because it is usually thin and the operators do not think it worth while to take it out. The mine tracks are laid on top of the clay above it.

A rather peculiar condition exists south of Vanceville, where the coal is locally split into two divisions several feet apart, separated by shale (sections 37 and 38). Both divisions are worked. The upper one is in turn split into two benches, separated by clay, probably corresponding with the usual "roof coal" and main bench. This opening shows the two benches 12 and 30 inches thick, separated by 13 inches of clay. This coal is very hard. The lower division measures 54 inches of coal, which is rather bony. In both divisions it contains a large percentage of sulphur. This is the only locality where the Waynesburg coal is certainly known to be split, but that such instances are probably numerous is indicated by the occurrence at several points in the quadrangle of two distinct blossoms separated by a few feet of shale or débris.

At a country bank on North Branch of Pigeon Creek the Waynesburg bed is said to consist of 8 feet of solid coal; but this statement can not be corroborated, as the entry has now fallen in. In the vicinity of Kammerer the coal has been mined at several country banks. At the Kammerer opening the two upper benches measure in all 38 inches, including 2 inches of shale, corresponding to the fire-clay parting found elsewhere (section 22).

This coal has been opened at many banks in the vicinity of Deemston and Zollarsville and a number of sections have been measured (sections 43 to 51), detailed sections of which follow:

Detailed measurements of the Waynesburg coal in the vicinity of Deemston and Zollarsville.

No. of section on Pl. VI.	Location.	Fire-clay.		Coal.		Fire-clay.		Coal.		Fire-clay.		Coal.		Total.	
		Ft.	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*
43	1 mile north of Deemston			1			11½	2			1		9	4	9½
44	.....do	([a])			9	1	2	[b]3			3		4	5	6
45	1.2 miles west-northwest of Deemston	([a])		3	2									3	2
46	1.3 miles northeast of Deemston				10		6	2	8		4		8+	5	
47	1 mile north-northeast of Zollarsville		[a]6	1	1	1		2	5					5	
48	"Horn's bank," Zollarsville			1	[c]10		7	1	4	([d])		1	3	5	
49	.....do				2	3	6	2	10					6	6
50	0.3 mile southwest of Zollarsville	[a]1	6	1	1		10	2+						5	5+
51	"Just above Zollarsville"[e]			1	1	1		2	10					4	11

[a] Sandstone rock.
[b] Contains 2 inches of bone 10 inches from bottom of the bench.
[c] Contains thin clay partings.
[d] Very thin.
[e] Second Geol. Survey Pa., Rept. K, p. 181.

These vary in thickness from 3 to 5½ feet, and in general show a fair correspondence, though the agreement is not so close as in the Pigeon Creek district. All the sections contain a main bench of 24 to 38 inches and with one exception have above the main fire-clay parting a roof coal reaching a maximum thickness of 22 inches, but averaging about 10 inches. In one case the sandstone roof rests directly on the main bench (section 45). The bottom coal is separated from the main bench by 1 to 4 inches of fire clay. In three cases the main bench is divided by a knife edge to 2 inches of bone or shale (sections 40, 44, and 48). As a rule the roof is sandstone, but locally it is shale and in some places fire clay. In the last case the clay is only 6 to 18 inches thick, and directly above it the sandstone is present, as usual. The main fire-clay parting thickens up here and there, as shown in Horn's bank (section 49), to 3 or 4 feet. In this section the "roof coal" is bony. The other section of Horn's bank (section 48) is more nearly the average.

On Little Tenmile Creek at the village of Lone Pine the Amity anticline brings the coal above stream level for about a mile, and it is worked at a number of country banks. The sections measured here show great uniformity (sections 52 to 58), and may therefore be taken as average for the Waynesburg coal in this region. Details are given in the next table.

Detailed measurements of the Waynesburg coal in the vicinity of Lone Pine.

No. of section on Pl. VI.	Location.	Fire clay.		Coal.		Fire clay.		Coal.		Fire clay.		Coal.		Total.	
		Ft.	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*	*Ft.*	*in.*
52	0.3 mile southeast of Lone Pine			1			11	2	8		5		8	5	8
53	"McCrerey bank," Lone Pine				10	1	1	[a]2	8		7		6	5	8
54	Lone Pine			1		1	2	2	7		4		6	5	7
55	.....do.[b]			1		1		3	3		3		6	6	
56	.....do.[b]				6	1	2	2	10		6		6	5	6
57	On Brush Run, Lone Pine[c]			1	3	1		3	1		3		10	6	5
58	On Little Tenmile Creek, above Lone Pine[c]			1	2		10	3	8		2		6	6	4

[a] Contains a thin binder.
[b] Second Geol. Survey Pa., Rept. K, p. 186.
[c] Op. cit., p. 183.

At Lone Pine the bed consists of roof coal 10 to 15 inches, white fire clay 11 to 14 inches, main coal 31 to 44 inches, fire clay 2 to 7 inches, and bottom coal 6 to 10 inches, the total thickness being 65 to 77 inches. In one instance (section 53) the main bench contains a thin binder about the middle. The top bench of the coal is poor and is not mined, being left in to help hold up the roof, which is here generally shale. Locally, however, the sandstone rests directly upon the coal.

QUALITY.

In quality the Waynesburg coal is greatly inferior to the Pittsburg seam. It is a hard block coal with no coking value, and usually contains a high percentage of ash and sulphur. The ash averages 10 to 20 per cent and the sulphur 2 to 5 per cent. The coal is used principally by the farmers in the vicinity and is considered a very fair fuel in sections where no better coal is obtainable, as, for instance, in southern Washington and western Greene counties. The upper bench is generally of poor quality, and when the roof consists of shale is sometimes left in by the miners.

In the survey of the Amity quadrangle two samples of this coal were taken from Horn's bank, Zollarsville. They are of the roof coal and the main bench, respectively. These samples were taken according to the standard practice, as explained in connection with the Pittsburg coal (p. 95), and were analyzed at the fuel-testing plant at St. Louis. Two sets of analyses are given, the second of each being for coal "air-dried."

Analyses of Waynesburg coal from Zollarsville.

[E. E. Somermeier, analyst.]

	Roof coal.		Main bench.	
	As received.	Air-dried.	As received.	Air-dried.
Moisture	2.90	1.22	2.27	0.98
Volatile matter	31.68	32.23	32.39	32.82
Fixed carbon	45.76	46.55	47.13	47.75
Ash	19.66	20.00	18.21	18.45
	100.00	100.00	100.00	100.00
Sulphur	4.43	4.51	2.89	2.93

In the report on Washington and Greene counties Stevenson[a] gives a number of analyses, two of which are from localities in this quadrangle. They are as follows:

Analyses of Waynesburg coal from Washington County.

[D. McCreath, analyst.]

	1.	2.
Moisture	0.740	1.190
Volatile matter	36.040	36.585
Fixed carbon	46.890	43.489
Ash	13.955	15.930
Sulphur	2.375	2.806
	100.000	100.000
Coke	63.220	63.225

1. Rogers's bank near Beallsville. 2. J. Moniger's bank, Lone Pine.

WAYNESBURG "A" COAL.

The Waynesburg "A" coal is very persistent throughout the county and can usually be recognized by blossoms occurring 50 to 80 feet above the Waynesburg coal. It occurs above the Waynesburg sandstone and is in many places associated with thin limestones. Usually the coal is thin, but in a few localities its blossom is so conspicuous that it has been mistaken for the Waynesburg. This is especially true in sections where the Waynesburg sandstone is absent, and in such cases there is no sure guide to the coals.

Only two measurements of this coal are known. They amount to 20 and 27 inches (fig. 6, Nos. 19 and 20, p. 102), and the coal is much broken up by bone and clay. At one of these localities, 1½ miles southeast of Lone Pine, the coal has been opened. This is the only known open bank on this bed in the quadrangle. If this exposure represents the best of the coal, it will be readily understood that the Waynesburg "A" seam can never be of much value.

---

[a] Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 278.

In Somerset Township, on North Branch of Pigeon Creek, the coal outcrops with the following section:

Section of Waynesburg "A" coal in Somerset Township.

	Ft.	in.
Sandstone	10	
Coal		10
Clay		4
Coal, slaty		5
Clay		2
Coal and shale	1	4

The Second Survey states that the Waynesburg "A" was once opened in West Bethlehem Township 1¼ miles northwest of Scenery Hill, but the thickness was only 15 inches.

WAYNESBURG "B" AND LITTLE WASHINGTON COALS.

These names have been applied at various times to thin coals occurring between the Waynesburg "A" and Washington beds in various parts of Greene and Washington counties. It is true that blossoms have frequently been found in this interval, and in one or two instances thicknesses as great as 1 to 2 feet have been reported, but it can be safely said that neither of the beds is of any value.

WASHINGTON COAL.

The Washington coal is known from the locality of its typical occurrence. It is 110 to 160 feet above the Waynesburg coal and directly below the Lower Washington limestone. This coal is much more persistent than any other coal bed of the Dunkard group, and reaches in many places a thickness of several feet, although on account of its numerous shale partings it is of little commercial value. At no point in the Amity quadrangle is the bed now worked, but conspicuous blossoms usually occur wherever its horizon crosses a road.

THICKNESS.

In the vicinity of Washington the coal is exposed at a number of points and locally reaches a thickness of 7 feet. It usually consists of many divisions of coal and shale. One of the best exposures to be seen is that in the Baltimore and Ohio Railroad cut just off the quadrangle in the western part of Washington. The coal is here 7 feet 1 inch thick and is overlain at a few feet by the Lower Washington limestone. The coal is subdivided by bands of clay, as shown in fig. 6, No. 14, page 102; the section follows:

Coal section in Baltimore and Ohio Railroad cut west of Washington (fig. 6, No. 14).

[Second Geol. Survey, Pennsylvania, Rept. K, p. 52.]

	Ft.	in.
Coal		3
Fire clay		8
Bituminous shale		10
Fire clay	1	3
Coal		5
Fire clay		1
Coal		2
Fire clay		2
Coal		3
Fire clay		3
Coal	2	9
	7	1

It is reported that along Little Chartiers Creek, on the boundary between South Strabane and Somerset townships, the Washington coal was once opened and had a thickness of 2 feet 6 inches. In numerous places on the ridge separating North Strabane and Nottingham townships it amounts to several feet. Stevenson reports a thickness of 2 feet 7 inches on Tenmile Creek[a] in Amwell Township, but it is here separated into three benches by two thick fire-clay partings (fig. 6, No. 15). In West Bethlehem Township, 1½ miles above Zollarsville,[b] it measures in all 3 feet 3 inches, but 11 inches of this is clay (fig. 6, No. 16). At Tenmile village 3 feet 6 inches is reported, containing two fire-clay partings, 5 and 6 inches in thickness. (see fig. 6, No. 17).

In the vicinity of Dunn station and West Amity the coal is recorded in a number of wells. On Little Daniels Run, 2 miles southwest of Scenery Hill, it was once opened and is reported 20 inches thick.

QUALITY.

Usually where the Washington coal has been seen in the quadrangle, it is made up of many alternating layers of coal and shale and is in general a very inferior coal. In neighboring districts, however, it is frequently found of fair quality, sometimes equaling the Waynesburg bed in value. No analyses have been made of the Washington coal in this quadrangle, but the following analyses from banks near Taylorstown, Washington County, and Ryerson Station, Greene County, are given to show the composition of the Washington coal when at its best:

---

[a] Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 52.

[b] Op. cit., p. 181.

Analyses of Washington coal from western Greene and Washington counties.

	1.		2.
	As received.	Air dried.	
Moisture	2.22	1.73	1.695
Volatile matter	36.79	36.97	39.150
Fixed carbon	46.96	47.20	46.658
Ash	14.03	14.10	10.525
	100.00	100.00	100.00
Sulphur	3.79	3.81	1 972
Moisture loss on air drying	....	.50	....
Coke	....	....	59.155
Color of ash	....	....	Gray.

1. Near Ryerson Station, western Greene County. Sample taken according to standard method (see p. 95); analyzed at fuel-testing plant, St. Louis, Mo., by E. E. Somermeier.

2. Near Taylorstown, Buffalo Township, Washington County; analyzed by A. S. McCreath (Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 376).

These analyses show a coal comparing very favorably with the Waynesburg bed. Usually, however, the quality is inferior to this, in respect both to ash and sulphur.

JOLLYTOWN COAL.

The name Jollytown was used by Stevenson in 1876[a] for a coal 40 to 50 feet below the Upper Washington limestone, and by I. C. White[b] in 1891 for a coal and limestone above the Upper Washington limestone. In the Waynesburg folio (1905) R. W. Stone followed Stevenson's use of the word, and that usage is maintained, as Stevenson had the right of priority. In the Amity quadrangle this coal is not known except at a few points in Amwell and West Bethlehem townships, where it appears as a faint blossom 60 to 80 feet below the Upper Washington limestone. It has been reported up to 20 inches in thickness.

TENMILE COAL.

About 30 feet above the Upper Washington limestone there occurs in many places a thin coal bed which was erroneously called by I. C. White the Jollytown, but it is not equivalent to the Jollytown of Stevenson, which occurs below the Upper Washington limestone. The name Tenmile coal is here suggested for this bed. The coal has been noted at a number of localities throughout West Bethlehem and Amwell townships, but is best developed south of Tenmile Creek. At several points it has been opened and found to reach a thickness of 1 to 3 feet. About 2.2 miles west-southwest of Tenmile village a thickness of 38 inches was measured. The coal contains thin partings and occurs between a black shale and shaly sandstone.

---

[a] Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 48.

[b] Bull. U. S. Geol. Survey No. 65, 1891, p. 34.

LOCAL COALS.

On Cemetery Hill, Washington, a coal 18 inches thick occurs 5 feet above the Upper Washington limestone and 5 feet below an 8-foot bed of limestone. Another coal blossom has been noted at several localities at an estimated interval of 170 to 200 feet above the Upper Washington limestone. This is probably equivalent to the Dunkard coal of southern Greene County.

COALS WHICH DO NOT OUTCROP.

COALS IN THE CONEMAUGH FORMATION.

Coal beds in the Conemaugh formation are usually thin and irregular in occurrence, but several horizons are known at which they appear to be rather persistent. One of these is reported in several wells in Washington County. In the Isaac Horn No. 1 well (283), near Zollarsville, it occurs at an interval of 445 feet, in the Joseph B. Wise No. 1 (303) at 410 feet, and in the Luse well (15) at 384 feet below the Pittsburg coal. The average interval to the Upper Freeport coal in this vicinity being assumed as 600 feet, the intermediate coal in these wells occurs at about 155, 190, and 216 feet, respectively, above the Upper Freeport. These intervals agree well with that of the Bakerstown coal, a thin bed which is present in many places in Allegheny and Beaver counties. In the Horn No. 2 well another coal has been noted 245 feet below the Pittsburg bed.

COALS IN THE ALLEGHENY FORMATION.

Except in one or two instances only two coal beds of this formation are recorded in wells of the Amity quadrangle. These beds are the Upper Freeport ("Connellsville") and a bed which lies about 150 feet below it.

The Upper Freeport coal lies at the top of the Allegheny formation and seems to be very persistent. The quality of this coal is not known, but the bed is reported in a number of deep wells. Its depth below the Pittsburg coal is given in the following table:

Distance from top of Pittsburg coal to top of Upper Freeport coal, as shown by drill records.

No. on Pl. I.	Name of well.	Location.	Distance.	Thickness of Upper Freeport coal.
			Feet.	*Feet.*
	C. M. Reed	South Strabane Township	600	....
20	Matilda Davis No. 2	Borough of Deemston	604	10
24	A. B. Crumrine	do	604	4
37	Oberholt	do	600	7
28	Wm. Crumrine	do	580	11
45	J. L. Thompson No. 2	do	564	5
46	J. L. Thompson No. 3	do	600	5

Distance from top of Pittsburg coal to top of Upper Freeport coal, etc.—Continued.

No. on Pl. 1.	Name of well.	Location.	Distance.	Thickness of Upper Freeport coal.
			Feet.	*Feet.*
47	J. L. Thompson No. 4	Borough of Deemston	597	5
48	J. L. Thompson No. 5	....do	610	10
43	Hiram Teagarten	....do	575	5
49	Wm. Ward	....do	582	6
265	Reed	Borough of Washington	595	....
281	Uriah Hill heirs	West Bethlehem Township	596	6
299	Thompson & Seaman Coal Co	....do	587	....
307	Peter Nickerson	West Pike Run Township	607	3
308	S. F. Scott	....do	574	....
	Average		585	....

The lower coal is reported only in the Elizabeth Morton No. 1 (291), Winnet McCarthy No. 2 (289), and Frank McCarthy No. 1 (286) wells in West Bethlehem Township. Its distance below the Pittsburg bed is 755, 745, and 750 feet, respectively. In those wells the coal is reported as the "Connellsville," but since the distance from the Pittsburg is too great, it is believed to be more probably the equivalent of one of the Kittanning group. What may be the same coal is recorded in the A. M. Wickerham well (50) in the borough of Deemston, but in this case the distance is only 721 feet. In the Luse well (15) near Beallsville, and in the Gantz well at Washington, a coal is recorded 672 feet and 653 feet, respectively, below the Pittsburg. This may possibly be the Lower Freeport coal of the Allegheny Valley, which in the vicinity of Connellsville is locally present about 40 feet below the Upper Freeport.

The A. C. Mitchell well, in West Pike Run Township, is the only one in the quadrangle which shows three coal beds in the Allegheny formation. In this record the following section is given:

Section of Allegheny formation in the A. C. Mitchell well, West Pike Run Township.

	Feet.
Coal (Upper Freeport)	5
Lime	29
Sand	10
Slate	24
Sand	32
Slate	14
Coal (Upper Kittanning?)	5
Slate	37
Coal (Middle Kittanning?)	8
Lime	20
Slate	25
Sand	45
Black lime	10
Slate	18
Sand	30
Slate	12
	324

LIMESTONE.

RELATIVE ABUNDANCE.

The rocks of the Monongahela and Washington formations present a striking contrast to the underlying Carboniferous rocks in the proportion of limestone they contain. While in the Pottsville, Allegheny, and Conemaugh formations beds of limestone are rare and, with a few exceptions, very thin, in the Monongahela and Washington deposits they are frequently found up to 20 or 30 feet in thickness, and in the Monongahela they make up nearly one-half the thickness of the formation. This is illustrated by a diamond-drill hole near Bissell, which reports between the Waynesburg and Pittsburg coals 130 feet of limestone, being over 41 per cent of the total thickness of the beds. This is due largely to the great thickness of the Benwood limestone. In the Washington formation the amount of limestone is less, but at least three beds reach thicknesses of 20 to 30 feet.

USES.

Certain impure limestones containing large percentages of silica, alumina, and iron oxide are capable of forming cement when burned in a kiln at a comparatively low temperature. Cements made in this manner are known as natural cements and are of much poorer quality than Portland cement, which is generally made from the purer limestones. For natural cement a limestone containing as high as 15 to 40 per cent of impurities is necessary. This kind of cement has been made in the past in southwestern Pennsylvania to a limited extent, principally for use in the construction of locks on Monongahela River. The bed used for that purpose was a part of the Benwood limestone.

Portland cement,[a] which has for years surpassed all other kinds of cement in its value and use, requires a purer limestone. The proportion of magnesium carbonate ($MgCO_3$), especially, must be low—preferably less than 3 per cent. In general the amount of calcium carbonate ($CaCO_3$) must be at least 75 per cent, and the remainder (20 per cent) includes silica (SO_2), alumina (Al_2O_3), and iron oxide (Fe_2O_3).

The principal use of limestones in this region at the present time is for road material, several quarries for this purpose being situated in the vicinity of Washington. The limestones seem also to be suited for railroad ballast, and when nearly pure carbonate of lime they may be used for flux in iron smelting. One of the most widespread uses of limestone in Pennsylvania has been for fertilizer, and for this purpose almost any except the most impure limes are suited. In Washington County, however, the great abundance of limestone beds has naturally formed a very good soil, and, as a rule, no burned lime is necessary on the land. In a few instances only were evidences that lime had been burned seen in the fields.

---

[a] A detailed discussion of the Portland cement industry and cement-making limestones of the United States is given by E. C. Eckel in Bull. U. S. Geol. Survey No. 243, 1905.

The principal limestone beds in the area are described from the bottom upward.

LIMESTONES BETWEEN THE PITTSBURG AND WAYNESBURG COALS (MONONGAHELA FORMATION).

FISHPOT LIMESTONE.

The Fishpot limestone underlies the Sewickley coal at a distance of a few feet. It was originally named by Stevenson from Fishpot Run, in the southeast corner of Washington County, but I. C. White[a] has applied the term Sewickley to this same limestone. During the present survey this bed was observed underneath the coal on Fishpot Run, where 30 feet of it is reported, and on Mingo Creek. In sinking the Enterprise mine shaft, 1 mile north of Washington, according to report 30 feet of limestone was found directly below the coal. Thin sandstone beds also frequently occur in this interval.

A sample of this limestone from Fayette County was analyzed by the Second Geological Survey[b] and found to have the following composition:

Analysis of Fishpot Limestone from Fayette County.

Insoluble residue	10.770	Sulphur trioxide (SO_3)	0.052
Calcium carbonate ($CaCO_3$)	80.647	Phosphoric oxide (P_2O_5)	.066
Magnesium carbonate ($MgCO_3$)	2.217	Water	1.010
Ferrous carbonate ($FeCO_3$)	1.657	Carbonaceous matter	1.250
Iron disulphide (FeS_2)	1.125		
Alumina (Al_2O_3)	.543		99.337

Compact; minutely crystalline; spotted with pyrite; dark blue.

If the bed attains this composition in Washington County, it should be of some value in the manufacture of Portland cement. One analysis, however, is not sufficient to justify a positive statement of this kind, since another analysis shows too large a proportion of magnesia.

BENWOOD LIMESTONE.

The Benwood (or Great) limestone is by far the most important limestone in the quadrangle. The name was suggested by I. C. White from the town of Benwood, near Wheeling, W. Va. In places it reaches, with its interbedded shales, a thickness of 160 feet, the proportion of limestone being usually about three-fourths of the whole. The detailed section of the Benwood varies somewhat, but it consists uniformly of a double composite bed; that is, it contains a lower and an upper member separated by a considerable thickness of shale, both members being in turn divided into a number of layers separated by thin beds of shale.

---

[a] Bull. U. S. Geol. Survey No. 65, 1891, p. 62.

[b] Rept. MM, 1879, p. 287.

At several points in the Amity quadrangle the Benwood is well exposed. In several ravines northeast of Kammerer, in eastern Nottingham Township, and in Union Township, off the edge of the quadrangle, the exposures are especially good. At one point, on a small run on the boundary of the quadrangle, in Union Township, the stream makes a perpendicular fall of 30 feet, caused by resistance to erosion of one of the limestone strata and the consequent undercutting of 25 feet of soft interstratified shales (Pl. VII, *A*). Similar falls, of less height, occur on several of the small streams in this vicinity. One of the best measured sections of this limestone is at the mouth of Brush Run, Peters Township, in the Carnegie quadrangle, as follows:

Section of Benwood limestone at mouth of Brush Run, Peters Township.[a]

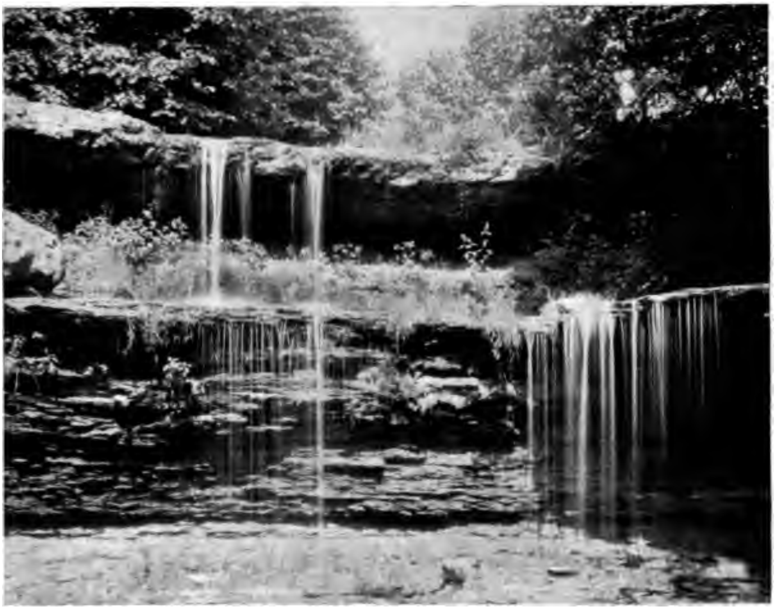
	Ft.	in.
Concealed	117	
Limestone	1	
Sandstone	5	
Limestone, brecciated	2	6
Concealed	15	
Limestone	4	6
Sandstone	14	
Concealed	15	
Shale	5	
Limestone	12	
Shale	12	
Limestone	50	
Shale, sandy, to creek	15	

A fair section of this limestone is also given in the record of the Moses Smith diamond-drill hole, near Bissell (p. 16). Several oil and gas wells report the limestone, but such records are less reliable than surface measurements.

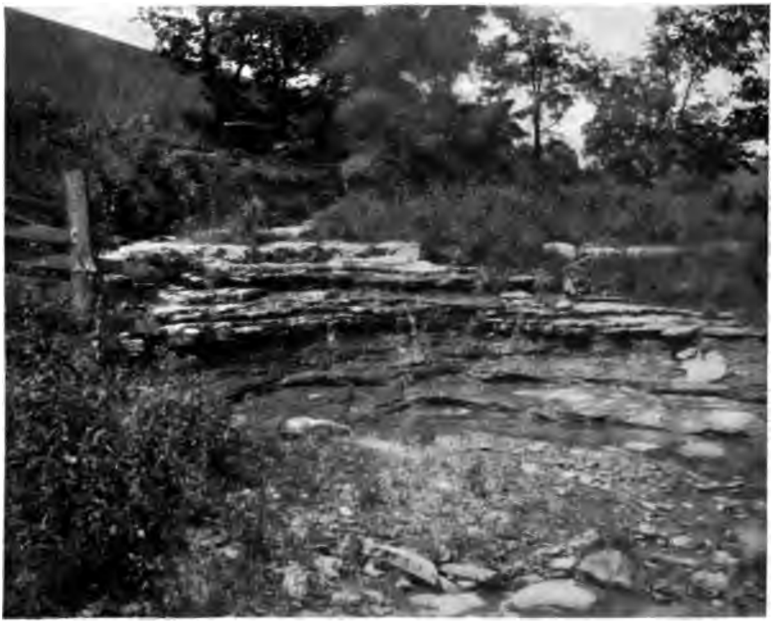
In general, the Benwood limestone is considerably broken up by shale, as in the section just given, but a hard layer 30 to 50 feet thick near the bottom seems to be very persistent. The character of the limestone is variable. The "Uniontown" member, or upper portion, contains in many places 6 to 15 feet of an impure brownish to buff-colored limestone. The lower portion is generally a hard, pure limestone of light-brown to gray colors. One thin stratum weathers very yellow, with a peculiar honeycombed appearance. The rock is in many places siliceous or argillaceous and in some ferruginous. The bottom portion is said to be generally the more magnesian, although all portions are high in magnesia, as indicated by the first three of the

---

[a] Stevenson, J. J., Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 226.



A. WATERFALL OVER BENWOOD LIMESTONE, UNION TOWNSHIP.



B. OUTCROP OF LOWER WASHINGTON LIMESTONE ON SMITH RUN, AMWELL TOWNSHIP.

following analyses. In Washington County the limestone was considerably used in early days in the manufacture of natural cement, but is nowhere suitable for Portland cement, on account of the large proportion of magnesia.

Analyses of Benwood limestone from Washington County.

	1.	2.	3.	4.
Insoluble residue	13.300	22.520	15.750	14.920
Calcium carbonate ($CaCO_3$)	68.837	48.823	47.080	47.750
Magnesium carbonate ($MgCO_3$)	14.649	20.621	28.528	30.943
Ferrous carbonate ($FeCO_3$)	3.306	3.625	7.511	5.608
Alumina (Al_2O_3)		3.523		
Sulphur	.097	.203	.069	.126
Phosphorus	.049	.051	.127	.015
	100.238	99.366	99.065	99.362

1. One mile north of Canonsburg; upper layer, very hard and compact, like conglomerate, bluish gray Second Geol. Survey Pennsylvania. Rept. K, 1876, p. 388; analysis by A. S. McCreath.
2. One mile north of Canonsburg; middle layer, compact, somewhat shaly, bluish gray. Loc. cit.; analysis by D. McCreath.
3. One mile north of Canonsburg; lower layer, hard, compact, unctuous, pearl gray. Loc. cit.; analysis by D. McCreath.
4. Property of Doctor Shaner, in Somerset Township, 8 miles from Washington. Second Geol. Survey Pennsylvania. Rept. MM, 1879, p. 285; analysis by D. McCreath.

WAYNESBURG LIMESTONE.

The Waynesburg limestone is a bed 4 to 20 feet in thickness, occurring below and within 40 feet of the Waynesburg coal. It is exposed and readily accessible at a number of places in various parts of the quadrangle. It is usually of a dark-gray color and makes a strong, but rather dark lime. The utility of this limestone has not been tested.

LIMESTONES ABOVE THE WAYNESBURG COAL (IN THE DUNKARD GROUP.

Scattered throughout the Dunkard group are abundant limestone beds, which were described by the Second Geological Survey and given numbers from I to XIV, inclusive.[a] Several of these beds are known to be persistent over considerable areas and can be recognized as distinct beds. Most of them, however, in the upper portion of the Dunkard have been shown by recent field work in western Greene County to be local in their occurrence and many of them can not be correlated with any bed at a distance. The more important beds are described in the following paragraphs.

LOCAL LIMESTONES BETWEEN THE WAYNESBURG AND WASHINGTON COALS.

Below the Waynesburg "A" coal and above the Waynesburg sandstone there occurs locally a limestone which was noted by Stevenson, but not named. It is well exposed on Dunkard Creek, at Mount Morris, Greene County, and has therefore been designated by I. C. White[a] the "Mount Morris limestone." In places in Washington County it is 5 to 10 feet thick, but is not persistent. It can be seen at many points in the eastern half of the quadrangle. It is commonly blue gray in color and weathers yellowish.

---

[a] White, I. C., Bull. U. S. Geol. Survey No. 65, 1891, p. 39.

A limestone is often found above the Waynesburg "A" coal also. It reaches a thickness of 8 to 10 feet and has generally a buff color. By I. C. White[a] it was named the "Colvins Run limestone," from Colvins Run, in Greene County.

LIMESTONES ABOVE THE WASHINGTON COAL.

LOWER WASHINGTON LIMESTONE.

This is the lowest of the three principal limestones occurring near Washington and named after that town. It forms the roof of the Washington coal. Here and there, however, a few feet of shale intervenes between the coal and the limestone. The Lower Washington occurs from 150 to 220 feet below the top of the Upper Washington limestone and 120 to 150 feet above the Waynesburg coal. Washington County is the region of its best development, and here its thickness ranges up to 30 feet. It is generally interstratified with much shale, as shown in the following section:

Section of Lower Washington limestone and associated shale on Smith Run.

	Ft.	In.
Limestone	9	6
Shale, black		5
Limestone		7
Shale, black		4
Limestone		1
Shale, black and soft		2
Limestone		2
Shale, black		2
Limestone, hard, blue to black, weathers white		9
Shale, soft, black	2	
Fire-clay shale, dark		4
Coal, bony		2
Shale, black		4
Fire-clay shale, dark		5
	15	5

An illustration of the outcrop of the above section is given in Pl. VII, *B*.

One mile southeast of Hackneys station, near Tenmile Creek, the following section was measured:

---

[a] White, I. C., Bull. U. S. Geol. Survey No. 65, 1891, p. 39.

Section of Lower Washington limestone near Hackneys.

	Ft.	in.
Limestone	1	
Shale, bituminous	2	
Limestone	1	
Clay		4
Limestone	1	
Clay		8
Limestone		6
Clay	1	
Limestone	1	
Clay		6
Limestone		2
Clay		6
	9	8
Coal, Washington	*1+*	

Still another good section occurs near Zollarsville. The measurement is as follows:

Section of Lower Washington limestone 2 miles west-northwest of Zollarsville.

	Ft.	in.
Limestone	2	
Shale, bituminous		3
Limestone		3
Shale, bituminous		2
Limestone		3
Shale, bituminous		1
Limestone		7
Shale		½
Limestone		3
Shale, bituminous		3
Limestone	1	
Shale, bituminous	2	
Limestone		6
Shale, bituminous	2	
Limestone	1	
	10	7½

The Lower Washington limestone is usually a hard, compact limestone, having a light blue-gray to fleshy color and commonly weathering bluish white. The color is not distinctive, and in general it can be said that in none of the limestones in the Dunkard formation is the color a certain guide to the identity of the bed. The colors mentioned are characteristic, however, and usually assist in identification. The utility of this limestone has not been tested, but at many widely scattered points it is rather massive and would seem to be of possible future value.

MIDDLE WASHINGTON LIMESTONE.

The Middle Washington limestone occurs 60 to 100 feet above the Lower Washington and 100 to 140 feet below the Upper Washington limestone. Where exposed it is a hard, compact light-grayish or flesh-colored rock, usually coarsely brecciated and containing numerous spots of crystalline calcite, many of them replacing fossil shells. The limestone can generally be recognized by the great quantity of iron it contains, giving it a weathered surface of bright yellow, which in many exposures extends to a depth of several inches and finally exfoliates and crumbles off. Some of the basal layers are more earthy and slaty and do not have this characteristic. The bed is locally 10 to 20 feet thick, but usually much thinner.

The Middle Washington limestone has a wide distribution in the quadrangle, but its typical occurrence is near Washington. In a cut of the Baltimore and Ohio Railroad in the eastern part of the town the large yellow bowlders from the bed are finely exposed. This limestone has never been used and does not appear to be of value.

JOLLYTOWN LIMESTONE.

In accordance with the usage of Stevenson (1876), this term is applied to the limestone occurring above the Jollytown coal and 30 to 40 feet below the Upper Washington. It is a hard, grayish, locally brecciated limestone, weathering light gray to dirty yellow. Owing to its peculiar character it is a good key rock. It is in places several feet thick, and appears below the Upper Washington limestone on most of the roads in the southwestern part of the quadrangle and in a few places elsewhere.

UPPER WASHINGTON LIMESTONE.

The Upper Washington limestone is the topmost bed of the Washington formation and, with the exception of the Waynesburg sandstone, is the most conspicuous and persistent member of the Dunkard group. For this reason it was chosen as the best horizon at which to subdivide the group into formations. It occurs 630 to 710 feet above the Pittsburg coal and 280 to 400 feet above the Waynesburg coal. The outcrop of this limestone throughout the quadrangle is represented on the geologic map (Pl. I, pocket) by the heavy green line separating the Washington and Greene formations.

The characteristics of the Upper Washington limestone are rather distinctive. It is hard, compact, and brittle, and is generally made up of a number of layers separated by thin beds of shale. Throughout the greater part of Washington County its upper part on fresh fracture has a dark blue-gray, bluish black, or even nearly black color. Generally it contains drab and mottled layers. The rock as a rule is very pure. In some portions of the district it is easily recognized by its weathered surface, which is almost snowy-white, with a slight tinge of blue. It varies in thickness from 4 to 30 feet.

The best exposures of this limestone are to be seen in the vicinity of Washington, where it reaches a thickness of nearly 30 feet. The tunnel of the Baltimore and Ohio Railroad, 1 mile east of town, cuts through the bed, exposing at its west end the section given below. The limestone is quarried at this place.

Section of Upper Washington limestone 1 mile east of Washington.

	Ft.	in.
Limestone, blue-black	2	3
Shale, black		2
Limestone, blue-black		10
Shale		4
Limestone, blue-black, brittle	1	10
Shale, black	2	2
Limestone, hard, gray, and thin shale	5	4
Shale, soft, dark		6
Limestone, light brownish gray, very hard, to level of railroad	3	6
	16	11

On Cemetery Hill, in the southwestern part of Washington, just off the quadrangle, a section of 19 feet exposed in an old quarry is made up of a great many thin beds of alternating limestone and shale. The detailed measurement of an average section here is as follows:

Section of Upper Washington limestone on Cemetery Hill, Washington.

	Ft.	in.
Limestone, gray-brown	1	
Shale, soft, black	1	
Limestone, hard, blue-black	2	5
Shale, black		4
Limestone, brown-gray		11
Shale, soft, black		2
Limestone, blue-black	1	8
Shale, black	1	1
Limestone, compact, brown-gray	3	
Shale, yellow		1
Shale, hard, black, slaty		2
Limestone, brown		10
Shale, light brown		2
Limestone, hard, brown	2	2
Shale, soft, dark		4
Limestone, hard, brown		4
Shale		3
Limestone, hard, brown	1	8
Fire-clay shale, dark	1	
Limestone, brown-gray; bottom of quarry.		
	18	9

The total thickness of the limestone on Cemetery Hill is 30 feet, as shown in the following section taken from Stevenson:[a]

Section of Upper Washington limestone at Washington.

	Ft.	In.
Limestone, laminated, argillaceous	2	
Shale, dark	5	
Shale, calcareous	6	
Shale with vegetable markings	2	
Limestone		10
Shale, bituminous		10
Limestone	2	
Shale, calcareous	1	3
Limestone	1	6
Shale		10
Limestone	3	
Shale	2	
Limestone	3	
	30	3

Another good section of a part of the limestone is exposed in a quarry one-half mile northeast of Washington, on the Williamsport pike. It is here quarried and crushed for road metal. The limestone is well exposed on all the roads leading out of Washington to the east and south, and outcrops at many points in the Nineveh syncline in South Strabane, northern Amwell, and South Franklin townships. In this region great care is necessary to avoid confusing it with another limestone which occurs 100 to 130 feet above. This limestone is also dark blue to black in color, and in thickness and other characteristics seems to be almost the exact counterpart of the Upper Washington.

A good exposure of the Upper Washington limestone appears in a quarry on the hill just southeast of Washington. The bed is here 15 feet thick. On the uplands in the vicinity of Mount Wheeler the limestone is deeply buried, but it appears again for about a mile between Vankirk station and the Chambers dam, and south of McCracken station is exposed along Bane Creek from 100 to 200 feet above the floor of the valley. In the vicinity of Amity and in general throughout the southern portion of Amwell Township it is high up on the hills, brought up by the Amity anticline. South of Tenmile Creek it is overlain by 200 to 400 feet of rock and its outcrop follows the valleys and ravines for the entire distance between Dunn station and Bissell.

Throughout West Bethlehem Township outcrops of the limestone are numerous, but they all occur high up on the hills, so that they appear on the map as mere patches. In the vicinity of Scenery Hill the outcrops are a little more extensive. One of the most continuous exposures of the limestone in the quadrangle is on the long ridge on which the road runs, extending in a northeast-southwest direction, about midway between Daniels and Plum runs west of Beallsville. The limestone seems to be at least 30 feet thick and appears for several miles near the top of the ridge as numerous dark blue-gray fragments. It has been quarried on a knob about a mile west of Beallsville and also on the National pike, one-half mile northeast of Odell, where it shows the following section:

---

[a] Second Geol. Survey Pennsylvania, Rept. K, 1876, p. 46.

Partial section of Upper Washington limestone near Odell.

	Ft.	in.
Shale (4 + feet).		
Limestone, dark blue-gray	1	8
Shale, dark		10
Limestone, dark blue-gray		11
Shale, black	1	1
Limestone, light gray	2	3
	6	9

On a hill near by the thickness of the limestone appears to be as great as 50 feet.

Near the middle of the Upper Washington limestone occurs a dark layer which contains great numbers of little fossils. The rock from this layer gives a peculiar fetid odor when struck by the hammer.

The Upper Washington limestone is, as a rule, a fairly pure bed. A sample of it taken from the railroad tunnel east of Washington, was analyzed by the Second Geological Survey[a] and shown to have the following composition:

Analysis of Upper Washington limestone near Washington.

[D. McCreath, analyst.]

Insoluble residue	17.380	Sulphur	0.155
Calcium carbonate ($CaCO_3$)	72.866	Phosphorus	.061
Magnesium carbonate ($MgCO_3$)	3.813		
Ferric oxide (Fe_2O_3)	2.929		97.204

This limestone is quarried at several points in the area. At present the most important output is from a quarry at the west end of the railroad tunnel east of Washington, the rock being used for railroad ballast. One mile northeast of Washington, on the Williamsport pike, is a small quarry operated by the Hallam Construction Company. The rock is crushed and used in macadamizing the streets of the town. The principal use of the limestone thus far has been for road metal and railroad ballast. If the proportion of calcium carbonate, as shown in the analysis, holds throughout the quadrangle, this bed would seem to be a possible source of lime for the manufacture of cement. The stone has been burned in many places for a fertilizer.

---

[a] Rept. MM, 1879, p. 388.

PROSPERITY LIMESTONE.

The Prosperity limestone is a bed not mentioned in the old Pennsylvania reports, and it was probably confused with the Upper Washington bed, to which it is very similar in appearance. The name "Prosperity" has been suggested by Mr. M. J. Munn from the village of that name in Washington County. The horizon of this bed is 100 to 180 feet above that of the Upper Washington, and the limestone outcrops at many points in South Strabane and Amwell townships as a hard, dark blue-gray to nearly black rock.

In thickness the Prosperity limestone is supposed to reach in places 20 feet. So far as known, it has not been tested, but from its compact nature and considerable thicknesss it would seem to be of probable future value, although in this quadrangle it is not very accessible.

SANDSTONE.

The sandstones of the Amity quadrangle are in general shaly and of poor quality, but a number of beds seem to offer stone of possible value.

PITTSBURG SANDSTONE.

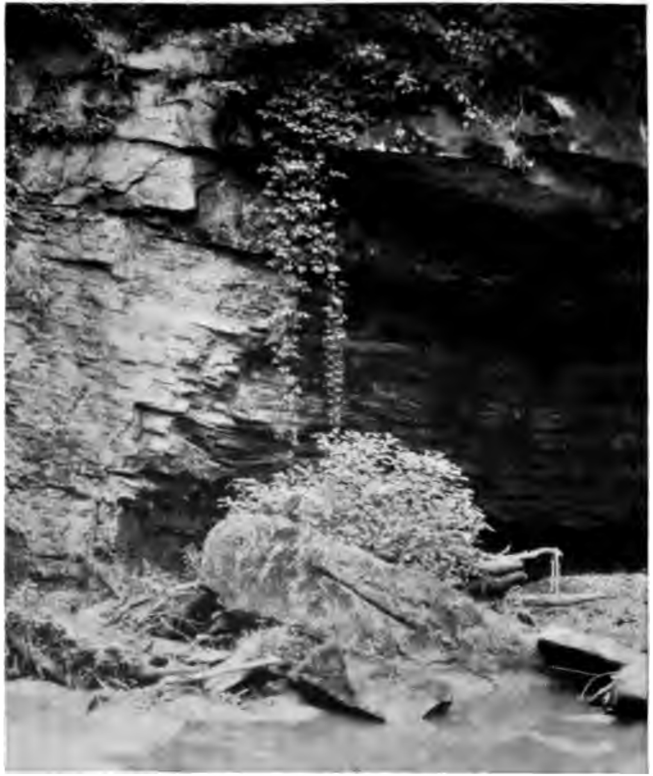
This name is applied to a bed of sandstone ranging up to 70 feet in thickness, which in many places overlies the Pittsburg coal. Where best developed it is coarse and friable. It can be seen at several points on Chartiers and Peters creeks, but is there poorly developed. On Fishpot Run, on the edge of the quadrangle near its southeast corner, the sandstone is well exposed in cliffs which rise above the Pittsburg coal to a height of nearly 100 feet (Pl. VIII *A*). So far as known, the Pittsburg sandstone has not been utilized.

WAYNESBURG SANDSTONE.

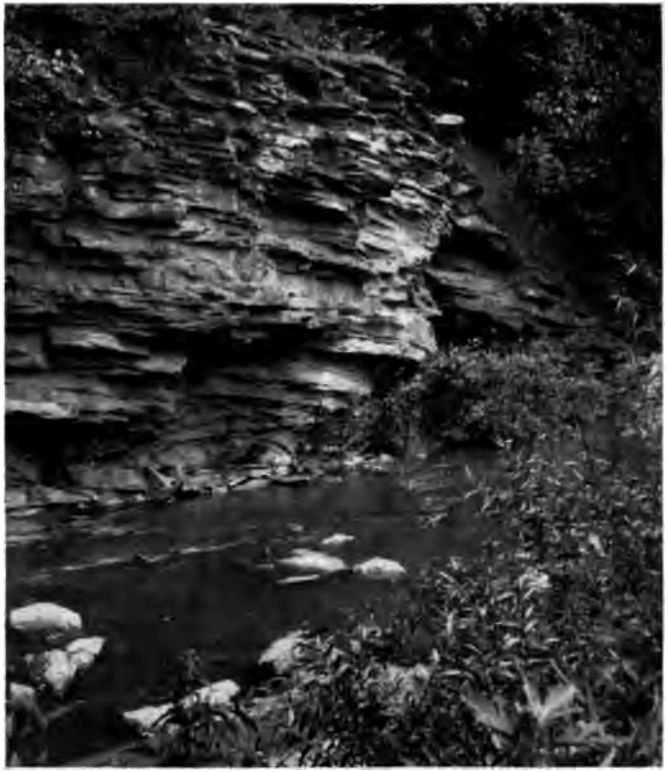
The Waynesburg is a coarse, flaggy, much cross-bedded sandstone, from 20 to 70 feet thick, resting on the Waynesburg coal or separated from it by a few feet of shale. Its color is usually buff-yellow to light gray. The name is derived from the town of Waynesburg, near which the rock is finely exposed. This is one of the most conspicuous and persistent sandstones in the upper portion of the Carboniferous system, and furnishes a good guide to the position of the Waynesburg coal.

In the Amity quadrangle the Waynesburg sandstone is probably most prominent on Little Tenmile Creek, in the vicinity of Lone Pine, where it crops out in 30-foot cliffs directly above the Waynesburg coal. At this locality it forms a flat terrace on which part of the village has been built, about 40 feet above the creek. The terrace and the character of the sandstone are illustrated in Pl. VIII, *B*.

The sandstone is also finely exposed on Little Chartiers Creek between the National pike and Linden, where it can be traced along



A. OUTCROP OF PITTSBURG COAL AT BASE OF PITTSBURG SANDSTONE IN VALLEY OF FISHPOT RUN, EAST BETHLEHEM TOWNSHIP.



B. BLUFF OF WAYNESBURG SANDSTONE AT LONE PINE, ON LITTLE TENMILE CREEK.

the public road for several miles, also in the neighborhood of Zollarsville, on Pike Run, throughout the borough of Deemston, and on South Branch of Pigeon Creek. On North Branch of Pigeon Creek, Mingo Creek, and farther north the sandstone is of little importance, being usually either shaly or replaced by shale. In the vicinity of Washington and Houston and in general over the northwestern portion of the quadrangle the sandstone is poorly developed or missing. In general, it may be said to be well developed in Greene and southern Washington counties, but to die out toward the northern part of Washington County.

It is generally flaggy to shaly, but here and there rather massive. It is probably too friable to be of much value, but it is said to have been used in Greene County for building.

OTHER SANDSTONES

The only sandstone quarry of any account in the Amity quadrangle is between the National pike and the railroad tunnel a mile east of Washington, about 130 feet above the Upper Washington limestone outcropping at the entrance to the tunnel. A fair-sized quarry is operated here by the Hallam Construction Company, the stone being used for curbing and bridge construction and to a limited extent in buildings. The sandstone lies a few feet above a bed of limestone reported in a well and is a good, hard, massive rock. The same bed has been prospected in other parts of the quadrangle.

Other sandstone beds of variable character are distributed through the Dunkard group and some of them may prove to be of value.

CLAY AND SHALE.

Two classes of material suitable for making brick are found in this territory. These are clay and shale, the former being a surface deposit and the latter making up a large proportion of the hard rocks.

CLAY.

In this quadrangle there are both residual surface clays and deposits in the stream valleys. The residual clays are of low grade and are abundant. The stream deposits are not so widely distributed, but are available at several points. So far as known, they have not been used in the quadrangle, but just beyond the northern border, between Houston and Canonsburg, is a small brickyard operated by the Alexander Brick Company. The clay used here is a tough silty layer of buff color capping a gravel terrace of the Carmichaels formation. The material is somewhat gritty to the teeth, but contains no pebbles. Below this bed occurs from 6 inches to 3 feet of gravel, and underlying that 8 feet of hard clay is reported. The lower bed is not known to have been utilized. The top clay is said to make very good brick, which are used for building in Canonsburg.

This clay occurs at several points in the quadrangle, but is of very local occurrence. It may be present on any of the rock benches in the valley of Tenmile Creek and elsewhere, but the patches are probably too local, thin, and gravelly to be of any importance in this area.

SHALE.

Shales of fine texture are very abundant in the Dunkard group and outcrop over wide areas. In other parts of the country some of these shales have been widely used in the manufacture of brick. In the Amity quadrangle and as a rule in western Pennsylvania they have been little used, but seem to offer a source of supply suitable for brick-making, and perhaps also in connection with limestone for making cement.

At only two points in the quadrangle is shale known to have been utilized. One of these is in the southern part of the borough of Washington, near the Baltimore and Ohio Railroad, where the Donley Brick Company operates a small plant for the manufacture of red brick. Shale is here worked in an open cut 25 feet deep, and it is said that an even greater thickness of the rock is suitable for the purpose. The shale is used just as it comes from the bank and is manufactured by the stiff-mud machine process, cut by automatic cutter. The company has been in operation for two years.

The Union Stone and Brick Company is operating at Vance station, on the Baltimore and Ohio Railroad. The pit from which the shale is obtained contains 15 to 20 feet of shale, above 40 feet of a micaceous sandy bed. For brick-making two parts of the lower bed and one part of the upper bed are used. The output in 1903 is reported to have been 1,500,000 brick.

WATER RESOURCES.

SURFACE DRAINAGE.

The Amity quadrangle contains no streams of large size. The most important are Tenmile Creek and its branches, Chartiers, Little Chartiers, Mingo, and Peters creeks, all of which rise within the limits of the quadrangle or near its borders. The largest stream is Tenmile Creek, which flows eastward nearly across the southern part of the quadrangle and has as branches on its north side Bane Creek, Little Tenmile Creek, and Daniels and Little Daniels runs. Chartiers Creek rises southwest of Washington, but flows for several miles in the quadrangle. All the streams are tributary to Monongahela River, which is only a few miles distant everywhere east of the quadrangle and nearly touches its southeast corner. The entire quadrangle is covered with a fine network of runs, tributary to the larger streams.

Geologically the streams of the quadrangle represent a mature type of drainage, in which the larger streams have attained a very uniform and gentle slope, and it is only at their heads and on the small feeders scattered over the area that the gradient even approximates to steepness. Few of the streams are likely, therefore, ever to be of much value for power. All except the largest generally run dry or nearly dry in the summer months, and even those which contain water the year round consist of mudholes during the summer. It is probable that with the growth of the communities it will become more and more necessary to construct reservoirs for the storage of water.

USE OF CREEK WATER.

One instance of the use of creek water for mill power is at the Chambers dam, on Bane Creek, 1¾ miles above the village of Sunset. At this point the creek water is stored in a pond about a quarter of a mile in length. There is also a small reservoir on a tributary to South Branch of Pigeon Creek, just above the mining town of Three and Four, and one on Center Branch a short distance above the confluence. The construction of many such reservoirs in the region would make it possible to store much of the water that is wasted during the spring and in storms and use it in various ways throughout the year. It is probable that when mining and other operations become more important in the region more such reservoirs will be constructed.

The creeks are now the principal source of water supply of the larger towns.

WATER SUPPLY OF WASHINGTON.

The Washington system of water supply is operated by the Citizens' Water Company, which has four reservoirs in the upper valley of Chartiers Creek, just beyond the quadrangle boundary. It is reported that the company has bought up the watershed, including the Pittsburg coal, with the exception of two or three farms, which are still occupied by their original owners. In all, the company owns 380 acres of land. During the summer months the inhabitants generally complain of a disagreeable "fishy" odor in the water drawn from the faucets, and some have wished to abandon it for this reason. If this odor has the same cause as similar odors which are frequent in surface drinking waters of many towns in the summer, as seems probable, it is due to algæ and similar organisms in the water of the reservoirs. In many towns these have been killed and the water restored to its former pleasant taste by treatment with sulphate of copper. Several years ago a number of cases of typhoid fever broke out in town and were thought by some to have been due to use of city water, but they were more probably due to polluted well water.

The following table gives various statistics concerning the reservoirs:

Statistics of reservoirs at Washington.[a]

	No 1.	No. 2.	No. 3.	No 4.	High-service reservoir.
Area.....acres..	6	3½	30	65	....
Length.....feet..	750	440	3,000	5,000	[b] 182 [c] 242
Width.....do....	320	320	[d] 700	[d] 1,000	[b] 100 [c] 170
Depth.....do....	6	6	[d] 31	[d] 2	20
Storage capacity.....gallons..	11,000,000	6,000,000	106,000,000	600,000,000	3,700,000
Area of watershed.square miles..	....	....	2	4	....

[a] From memorandum issued by Citizens' Water Company. [b] Bottom. [c] Top. [d] At breast.

The high-service reservoir is situated on the hill southwest of Washington, at an elevation of about 1,330 feet, 309 feet above the pumping station and 293 feet higher than the lowest point in town. The pressure is 70 to 140 pounds. The total storage capacity is 726,700,000 gallons, the capacity of the pump 3,000,000 gallons every twenty-four hours. The consumption in 1902 was less than 1,000,000 gallons per day. It will be seen, therefore, that an abundant supply is assured to Washington for some time.

All water furnished to consumers is first passed through a gravity sand-filter plant. This plant consists of sedimentation and settling tanks and four large automatic sand-filter tanks, which are cleansed every day by machinery. The capacity is between 3,000,000 and 4,000,000 gallons of water per day.

OTHER TOWN SUPPLIES.

The majority of the wells supplying the settlements along Peters Creek and the village of Houston, on Chartiers Creek, are very shallow. In the village of Bentleyville most of the residents have dug wells, but for two or three years a number of drilled wells have been in use. The deepest of these is 240 feet deep, but the majority are only 80 to 90 feet. There are but two springs in use in the village. The supply for the individual houses in the town of Ellsworth is also from wells, the average depth being 100 feet. On a branch of Pigeon Creek, above the Ellsworth collieries Nos. 3 and 4, is situated a small reservoir to supply the coke ovens. This company has lately constructed on the Eli Tombaugh farm, on Center Branch of Pigeon Creek, a reservoir which has an estimated capacity of 12,000,000 gallons, and is, like the other, used to supply water to the plant.

SUPPLY OF THE FARMING COMMUNITIES.

The water supply of the farming communities in this quadrangle comes both from springs and wells. The springs are very numerous, and the topography is such that on the lower slopes of the hills they usually furnish plenty of water. In the valley bottoms and on the flatter ridges and hilltops wells are more common, but in general it is not necessary to go very deep for water. In a number of wells drilled for oil or gas which have failed to produce or run dry, the upper part has been subsequently transformed into a water well and pumped by hand or with a windmill. There are few windmills in the quadrangle, as they are generally unnecessary.

WATER-BEARING HORIZONS.

Few data are at hand regarding water-bearing strata, for the reason that the water wells in this quadrangle are, as a rule, too shallow to permit general interpretations of this nature, and of the oil and gas wells only about twenty record any water horizons.

The principal water-bearing bed recognized by the drillers is the Pottsville formation. For the reason that it contains much salt water, it has been named the "salt sand." By some persons it has on this account been supposed to mark the depth of sea level, but it can be positively stated that the salt sand has no connection with the level of the sea. This sand in eastern Ohio was half a century ago the source of brine for the salt works which formed an important industry at that time. The water generally occurs somewhere near the middle of the salt sand, and may possibly occur in connection with the Mercer member, which in places forms a break in the sand. This supposition is purely hypothetical, however, and it is certainly not everywhere true, as in some cases the water occurs near the top or bottom of the sand.

The deeper oil and gas sands in this region are generally dry or very nearly so, so far as water is concerned, but where water is found at great depths in the wells it is almost uniformly salt. At shallow depths, on the other hand, down to several hundred feet, it is usually fresh. In several cases, notably in the M. Mounts well in North Franklin Township and in the Wherry No. 1 well in West Bethlehem Township, salt water is reported in the "Big Injun" sand of the Pocono formation. In the Mounts well the water filled the well to a depth of 30 feet.

In general, it may be said that there is a possibility of salt water being encountered in any porous oil sand in the synclines. Where oil occurs it is lighter than the water and will rest on it, occurring farther up the flank of the anticline.

Some of the most common occurrences of water are in coal beds.

In the Pittsburg, Upper Freeport, and Kittanning seams, especially, water is often reported. Several other horizons that are locally water-bearing in the Allegheny and Conemaugh are believed to mark portions of coal beds. The J. L. Thompson No. 1 well, in the borough of Deemston, was known to have filled up to the surface, 1,370 feet, from an influx of water somewhere near the base of the Allegheny formation. Water has been found 160 to 175 feet below the Pittsburg coal, 220 feet above the same coal, between the Waynesburg and Washington coals, and nearer the surface, but few shallow horizons are recorded.

TOPOGRAPHIC DATA.

TRIANGULATION STATIONS.

All topographic surveying for the maps of this quadrangle is based on triangulation stations on a number of the principal hilltops of the territory and its vicinity. These stations have been connected by triangulation with stations in other portions of the State and the accuracy of the work carefully checked. The locations of the stations within the quadrangle are shown on the topographic map by small triangles east of Houston, on Mount Wheeler, and at Scenery Hill (Hillsboro), and fig. 7 shows the relative position of all the points. The stations are marked by stone posts, set about 3 feet in the ground, and in the center of the top of each post is cemented a bronze tablet marked, "United States Geological Survey—Pennsylvania."

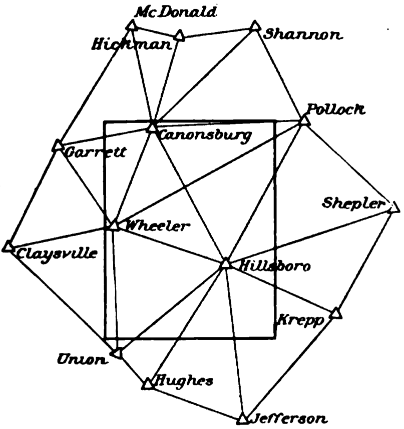


FIG. 7.—Location of triangulation stations in and near the Amity quadrangle.

The following is a description of the stations:

KREPP, WASHINGTON COUNTY.

About 1½ miles northwest of Brownsville, on a prominent and well-known bald knob owned by James Nickson.

[Latitude 40° 01′ 44.55″. Longitude 79° 54′ 25.69″.]

To station.	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Hillsboro	115 13 26.6	295 07 06.8	4.1890430

POLLOCK, WASHINGTON COUNTY.

On Pollocks Hill, about 2 miles west of West Elizabeth, on road to Finleyville, 400 feet west of a rough board shanty on highest point of bare hill owned by Mr. McClure.

[Latitude 40° 15′ 08.99″. Longitude 79° 57′ 06.26″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Hillsboro	29	10	08.6	209	05	31.5	4.3197152
Mount Wheeler	61	30	40.4	241	19	25.7	4.4496631
Canonsburg	87	29	40.3	267	20	47.3	4.2904183

JEFFERSON, GREENE COUNTY.

About 1½ miles southeast of Jefferson, on a high bald knob owned by Lawrence Kraft.

[Latitude 39° 54′ 58.46″. Longitude 80° 02′ 11.35″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Hillsboro	171	14	13.9	351	12	54.0	4.2860956

HILLSBORO, WASHINGTON COUNTY.

In a rocky pasture, about 1,000 feet north of Hillsboro (Scenery Hill) church, about halfway between Brownsville and Washington along the National pike, on land owned by Mrs. E. S. Tombaugh, who lives at crossing about 1,500 feet southeast of station.

[Latitude 40° 05′ 17.67″. Longitude 80° 04′ 15.81″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Pollock	209	05	31.5	29	10	08.6	4.3197152
Shepler	251	34	48.6	71	44	42.6	4.3616006
Krepp	295	07	06.8	115	13	26.6	4.1890430
Jefferson	351	12	54.0	171	14	13.9	4.2860956
Keener	319	14	33.3	139	22	16.0	4.4181154
Hughes	33	02	20.9	212	51	42.6	4.2751190
Union	51	48	48.2	231	42	26.5	4.2531028
Mount Wheeler	108	08	43.9	288	02	07.1	4.1859700
Canonsburg	151	42	44.5	331	38	29.5	4.2949237

CANONSBURG, WASHINGTON COUNTY.

In North Strabane Township, in a cultivated field at summit of high knob, 1 mile S. 15° E. of Canonsburg and in view of the town, on land owned by James Hanna, who lives on east side of hill at a road fork.

[Latitude 40° 14′ 40.51″. Longitude 80° 10′ 51.20″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Mount Wheeler	22	31	03.0	202	28	40.8	4.1345757
Claysville	50	18	45.5	230	10	19.6	4.3826975
Garrett	78	04	35.4	257	59	04.1	4.0933003
McDonald	163	11	12.3	343	09	24.7	4.1326119
Hickman	194	34	17.5	14	35	39.2	4.0737263
Shannon	226	14	17.1	46	20	22.0	4.2656474
Pollock	267	20	47.3	87	29	40.3	4.2904183
Hillsboro	331	38	29.5	151	42	44.5	4.2949237

HUGHES, GREENE COUNTY.

On a hill covered with an orchard of small peach trees, about 3½ miles north of Waynesburg, owned by the Hughes estate.

[Latitude 39° 56′ 45.33″. Longitude 80° 11′ 28.53″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Union	141	03	49.6	321	02	06.5	3.7827879
Hillsboro	212	57	42.6	33	02	20.9	4.2751190

M'DONALD, WASHINGTON COUNTY.

In a pasture at the highest point of a hill one-half mile south of McDonald, on land owned by William F. Wood, who lives on the southeast side of hill.

Reference marks: A large black-oak line tree at the north boundary fence 275 feet distant. A large white-oak line tree at the west boundary fence 303 feet distant.

[Latitude 40° 21′ 41.66″. Longitude 89° 13′ 37.56″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Canonsburg	343	09	24.7	163	11	13.3	4.1326119

UNION, GREENE COUNTY.

In a pasture on a prominent hill 7 miles north-northwest of Waynesburg and 1½ miles east of West Union.

[Latitude 39° 59′ 18.24″. Longitude 80° 14′ 19.16″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Wheeler	178	04	16.4	358	04	01.9	4.2002916
Hillsboro	231	42	26.5	51	48	48.2	4.2531028

WHEELER, WASHINGTON COUNTY.

On a sparsely timbered hill 3 miles south of Washington on land of William Courson, who lives at north base of hill.

[Latitude 40° 07′ 52.16″. Longitude 80° 14′ 31.71″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Claysville	78	01	54.2	257	55	51.0	4.1350995
Garrett	145	24	29.4	325	21	20.7	4.0856664
Canonsburg	202	28	40.8	22	31	03.0	4.1345757
Pollock	241	19	25.7	61	30	40.4	4.4496631
Hillsboro	288	02	07.1	108	08	43.9	4.1859700
Union	358	04	01.9	178	04	16.4	4.2002916

GARRETT, WASHINGTON COUNTY.

In a cleared field owned by J. C. Garrett, 3 miles east of Buffalo village and 5 miles northwest of Washington, on the hill road to Hickory.

Reference marks: Wire fence, west 113 feet; large walnut tree, N. 34° 30′ W., 433 feet.

[Latitude 40° 13′ 17.16″. Longitude 80° 19′ 24.18″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Canonsburg	257	59	04.1	178	04	35.4	4.0933003
Mount Wheeler	325	21	20.7	145	24	29.4	4.0856664

CLAYSVILLE, WASHINGTON COUNTY.

On a cone-shaped hill, 1 mile south of Claysville, on cultivated land belonging to J. Mosier.

Reference marks: Double chestnut tree, south 72 feet; apple tree, east 80 feet.

[Latitude 40° 06′ 20.01″. Longitude 80° 23′ 55.46″.]

To station—	Azimuth.			Back azimuth.			Log. distance.
	°	′	″	°	′	″	*Meters.*
Canonsburg	230	10	19.6	50	18	45.5	4.3826975
Mount Wheeler	257	55	51.0	78	01	54.2	4.1350995

SHEPLER, WESTMORELAND COUNTY.

About 4 miles southeast of Bellevernon and 5 miles east of Charleroi, on a high cultivated hill owned by John Shepler.

[Latitude 40° 09′ 12.22″. Longitude 79° 48′ 54.10″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Hillsboro	71 44 42.6	251 34 48.6	4.3616006

SHANNON, ALLEGHENY COUNTY.

About 1 mile south of Castle Shannon post-office, on a high cultivated knob, on which is one tree about 30 feet northeast of signal.

[Latitude 40° 21′ 33.53″. Longitude 80° 01′ 26.95″.]

To station—	Azimuth.	Back azimuth.	Log. distance.
	° ′ ″	° ′ ″	*Meters.*
Canonsburg	46 20 22.0	226 14 17.1	4.2656474

HICKMAN, ALLEGHENY COUNTY.

On a bald hill in South Fayette Township, 2½ miles southwest of Bridgeville, on land belonging to William Hickman, who lives on south side of hill.

[Latitude 40° 20′ 52.33″. Longitude 80° 08′ 44.87″.]

To station	Azimuth.	Back azimuth.	Log. distance
	° ′ ″	° ′ ″	*Meters.*
Canonsburg	14 35 39.2	194 34 17.5	4.0737263

MERIDIAN MARKS.

WASHINGTON, WASHINGTON COUNTY.

Location of station: A few feet north of sidewalk, on the south side of and near the southwest corner of the campus of Washington and Jefferson College.

Station mark: A sandstone post 48 by 12 by 12 inches, set about 40 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

Distant mark: North of station 482 feet; a sandstone post about 48 by 12 by 12 inches, set about 36 inches in the ground, in the center of top of which is cemented a bronze meridian tablet.

SPIRIT-LEVEL DATA.

The contours on the topographic map are based on precise levels run by railroad engineers and by the United States Geological Survey. During the course of the topographic work numerous bench marks were established, and their elevations are given below:

Bench marks in the Amity quadrangle.

	Feet.
Amity, post-office and store of F. F. Iams & Son, on north side of door, east side of road, in stone doorstep of; aluminum tablet marked "1204 PITTSBURG"	1,200.824
Amity, 5.8 miles north of, 180 feet north of crossroads, one to Lone Pine, the other to Amity, on locust tree 10 inches in diameter	1,037.5
Beallsville, 50 feet southwest of center of crossroads at Greenfield's hotel, 30 feet west of corner of porch, in middle of step; bronze tablet marked "1137 PITTSBURG"	1,135.970
Beallsville, 3.3 miles northwest of, at Scenery Hill, at mouth of alley 150 feet north of blacksmith shop, on stone	1,440.34
Centerville, 2 miles northwest of; top of milepost marked "83 miles to Cumberland, 48 miles to Wheeling"	1,206.64
Scenery Hill; Hillsboro triangulation tablet at top of, marked "1467 PITTSBURG"	1,466.858
Scenery Hill, 0.6 mile north of, at bottom of milepost marked "88 to Cumberland, 43 to Wheeling," on stone	1,305.03
Scenery Hill, 1.7 miles north of, at crossroads, 0.75 mile north of pike; oak stump 36 inches in diameter, nail in top of	1,147.87
Vanceville, bridge over Pigeon Creek at, on southeast abutment	1,033.60
Vanceville, 0.5 mile southeast of, 300 feet from top of hill, 300 feet southwest of house, 5 feet west of center of road; oak tree 36 inches in diameter, nail in root of	1,171.46
Vanceville, 0.9 mile northwest of, 400 feet northwest of house, on west side of road; locust tree 24 inches in diameter, nail in root of	1,122.30
Vanceville, 1.7 miles northwest of, bridge over Pigeon Creek, 235 feet south of center of crossroads; bronze tablet, set in north end of southwest abutment, marked "1044 PITTSBURG"	1,042.454
Vanceville, 2.2 miles northwest of, at Dunningsville and Canonsburg crossroads; stone in center of "Y," chisel mark on	1,071.03
Vanceville, 2.3 miles northwest of, 900 feet southwest of church, 35 feet west of bridge, in front of white house, on stone	1,066.11
Venetia, post-office (Anderson station), iron wagon bridge at road crossing, northwest bridge seat of; aluminum tablet stamped "986 PITTSBURG"	985.073
Washington County court-house, 60 feet southeast of southeast corner of, at northwest corner of Cherry alley and Main street, in southeast corner of retaining wall around court-house; bronze tablet marked "1158 PITTSBURG"	1,156.064
Washington, at east end of, 130 feet north of street-car track, at end of paving on National pike, on north side of Baltimore and Ohio Railroad; chisel mark on stone	1,119.85
Washington, 0.4 mile south of, south of Pan Cake at crossroads to Lone Pine and Vance Station, on south side of stone culvert, chisel mark	1,314.6
Washington, 3.1 miles south of, 1.7 miles south of Pan Cake, southeast abutment of bridge over creek; chisel mark	1,084.3
Washington, 3.5 miles east of, railroad bridge No. 153, on northwest corner of abutment; chisel mark	1,112.43
Washington, 7.2 miles east of, railroad bridge No. 144, on southwest abutment, east end; chisel mark	1,005.14
Washington, 7.5 miles east of, Baltimore and Ohio Railroad bridge No. 140, on northwest abutment, on north side of creek, 3 feet below rail, aluminum tablet marked "995 PITTSBURG"	991.754

PRINCIPAL PUBLICATIONS BEARING ON THE GEOLOGY OF THE AMITY QUADRANGLE AND VICINITY.

CAMPBELL, M. R. Masontown-Uniontown folio: Geologic Atlas U. S., folio 82, U. S. Geol. Survey, 1902.

——— Brownsville-Connellsville folio: Geologic Atlas U. S., folio 94, U. S. Geol. Survey, 1903.

CARLL, JOHN F. Seventh report on the oil and gas fields of western Pennsylvania for 1887, 1888: Second Geol. Survey Pennsylvania, Rept. I5, 1890.

——— Report on the oil and gas regions: Ann. Rept. Second Geol. Survey Pennsylvania, 1886, pt. 2.

CLAPP, F. G. Limestones of southwestern Pennsylvania: Bull. U. S. Geol. Survey No. 249, 1905.

——— Amity folio, Geologic Atlas U. S., folio 144, U. S. Geol. Survey, 1907.

——— The Nineveh and Gordon oil sands in western Greene County, Pennsylvania: Bull. U. S. Geol. Survey No. 285, 1906, pp. 362–366.

——— Rogersville folio: Geologic Atlas U. S., folio —, U. S. Geol. Survey (in press).

DAY, DAVID T. Petroleum and natural gas: Mineral Resources U. S. for 1886–1904, U. S. Geol. Survey, 1887–1905.

DERRICK PUBLISHING COMPANY. Handbook of Petroleum, 1859–1898. Oil City, 1898.

D'INVILLIERS, E. V. Report on the Pittsburg coal region: Ann. Rept. Second Geol. Survey Pennsylvania, 1886, pt. 1.

FONTAINE, WILLIAM M., and WHITE, I. C. The Permian or Upper Carboniferous flora of West Virginia and southwestern Pennsylvania: Second Geol. Survey Pennsylvania Rept. PP, 1880.

GRESLY, W. S. "Slate binders" of the Pittsburg coal bed: Am. Geologist, vol. 14, 1894, pp. 356–365, figs. 1–2.

LESLEY, J. P. A geological hand atlas of the sixty-seven counties of Pennsylvania: Second Geol. Survey Pennsylvania, Rept. of Progress X, 1885.

——— A summary description of the geology of Pennsylvania, in three volumes: Second Geol. Survey Pennsylvania, Final Rept., vol. 3, pt. 2, 1895.

LINN, A., and LINTON, E. Notes on the Mountain limestone (at the base of No. XI) in the Washington County gas wells: Ann. Rept. (Second) Geol. Survey Pennsylvania for 1885, 1886, pp. 222–226.

ROGERS, H. D. Annual Reports of the Geological Survey of Pennsylvania, 1836–1842.

——— The geology of Pennsylvania, 2 vols., 1858.

STEVENSON, J. J. Report of progress in the Greene and Washington district of the bituminous coal fields of western Pennsylvania: Second Geol. Survey Pennsylvania, Rept. K, 1876.

STONE, R. W. Waynesburg folio: Geologic Atlas U. S., folio 121, U. S. Geol. Survey, 1904.

STONE, R. W., and CLAPP, F. G. Oil and gas fields of Greene County, Pennsylvania: Bull. U. S. Geol. Survey No. 304, 1907.

WHITE, I. C. Stratigraphy of the bituminous coal field of Pennsylvania, Ohio, and West Virginia: Bull. U. S. Geol. Survey No. 65, 1891.

——— West Virginia Geol. Survey, vol. 1, 1899; vol. 1 (a), Oil and gas, 1904; vol. 2, Coal, 1903.

INDEX.

A. Page.

- Alexandria Brick Company, plant of 129
- Allegheny formation, coals in 116-117
  - occurrence and description of 11,23-25
  - oil and gas sands in 49,50
  - sections of 24
  - water in 134
- Allison mine, coal of, section of 93
- Amity anticline, location and description of. 40-41
- Amity gas field, location and description of. 44
- Amwell Township, wells in, records of 70-71
- Anticlinal theory of oil and gas 62-63
- Ashurst's (P.) bank, coal of, analysis of 97

B.

- Barre No. 1 well, data on 46
- Barren Measures, occurrence of 12,20
- Bayard sand, correlation of 49
  - depth to 70-87
  - gas from 70,72,82,86
  - occurrence and description of 32,58
- Beallsville, Borough of, wells in, records of. 70-71
- Bedell (William) well, record of 33-35
- Bellevernon anticline, location and description of 38-39
- Bench marks, location of 139
- Bentleyville, Borough of, wells in, records of 70-71
- Benwood limestone, analysis of 121
  - occurrence and description of 119-121
  - section of 120
  - waterfall over, view of 120
- Berea sand, correlation of 49,52
- Bibliography of quadrangle 140
- Big Dunkard sand, correlation of 49
  - occurrence and description of 50
- Big Injun sand, correlation of 28,49
  - depth to 51,70-87
  - gas from 86
  - occurrence and description of 29,50-52
  - oil from 60,82
  - wells to 46
- Big lime, correlation of 25,49
  - depth to 70-87
  - description of 27
  - persistency of 11
- Bissell, sections at and near 16,92,118
- Blanche mine, coal from, analysis of 96
  - coal of, section of 94
- Bluff sand, correlation of 49
- Boon mine, section of 94
- Burgoon sandstone, correlation of. 28,29,49,50-51
- Butler County sand, correlation of 49,52

C.

- Cameron No. 1 well, data on 46
- Canonsburg, limestone near, analyses of 121
- Canonsburg oil field, development in 45

Page.

- Canonsburg triangulation station, location of 135-136
- Carboniferous rocks, occurrence and descriptions of 11-30
  - section of, figure showing 20
- Carnegie Natural Gas Company, operations of 47
- Catskill beds, occurrence and description of. 31-32
- Center Township, section in 13
- Chartiers Creek, oil storage on 10-11
- Chartiers Township, wells in, records of 70-71
- Chemung formation, occurrence and description of 11,30-32
  - oil and gas sands in 49,55
  - sections of 31
- Citizens Natural Gas Company, development by 45
- Clarion sandstone. *See* Kittanning sandstone.
- Clay, occurrence and description of 129-130
- Claysville triangulation station, location of. 137
- Coal, occurrence and description of 88-117
  - topography and importance of 10
- Conemaugh formation, coals in 116
  - occurrence and description of 11,20-23
  - oil and gas sands in 49-50
  - sections of 21-23
  - water in 134
- Connellsville coal, correlation of 49
- Contours, structure, explanation of 36-38
- Creeks, description of 130
  - water of, use of 131
- Crumrine (A. B.) well No. 1 (24), record of. 24,26
  - section of, figure showing 22
- Crumrine (William) well No. 1, section of, figure showing 22

D.

- Davis (Matilda) well No. 2 (29), data on, record of 21-22
  - section of, figure showing 22
- De Wolf F. W., work of 9
- Deemston, Borough of, wells in, records of. 70-73
- Devonian rocks, occurrence and description of 11,30-36
- Drainage, surface, description of 130-131
- Dunkard group, limestones in 121-128
  - occurrence and description of 11-15
- Dunkard sands, correlation of 21,49
  - occurrence and description of 49-50

E.

- East Bethlehem Township, wells in, records of 72-73
- Elizabeth sand, correlation of 49
  - depth to 58,70,78

Page.
Elizabeth sand, gas from 70,72,86
  occurrence and description of 32,58-59
Ellsworth collieries, coal of, analyses of 96,97
  coal of, coke from, analysis of 97
    sections of 95

F.

Fertilizer, limestone for 118-119
Fifth sand, correlation of 49
  depth to 70-87
  gas from 74,76
  occurrence and description of 32,57-58
  wells to 57-58
Fifty-foot sand, correlation of 49
  depth to 70-87
  gas from 70,78
  occurrence and description of 29,54-55
  oil from 60,72,76,78,80,82
First sand, correlation of 49,52
Fishpot limestone, analysis of 119
  occurrence and description of 119
Fishpot Run, Pittsburg coal on, view of 128
Fonner oil field, development in 47
  location and description of 44
  production of 61
Fonner (William) No. 2 well, record of 56
Fourth sand, correlation of 49
  depth to 70-87
  occurrence and description of 32,57

G.

Gantz sand, correlation of 49
  depth to 70-87
  gas from 72,76,78,84
  occurrence and description of 29,42,52-54
  oil from 60,72,76,78,80,82,84
  relation of, to Pittsburg coal, figure showing 53
  wells to 45,47,54
Gantz well, history of 45
  record of 23
  section of, figure showing 22
  view of 44
Garrett triangulation station, location of 137
Gas, analyses of 66
  composition of 66
  development of, history of 44-47
  distribution of 42-44
    map showing 43
  occurrence of 10-11,42-88
    mode of 48
    theory of 62-65
  origin of 65
  pressure of 62
  production of 59-62
  rocks containing 47-59
  waste of 67
Gas and oil fields, distribution of 42-44
  distribution of, map showing 43
Gas and oil sands, names and correlation of 49
Gas sand, correlation of 49
  occurrence and description of 50
Geography, description of 9-11
Geologic map of quadrangle Pocket.
Gordon sand, correlation of 49
  depth to 70-87

Page.
Gordon sand, occurrence and description of 32,55-57
  oil from 60,78
  wells to 45
Gordon Stray sand, correlation of 49
  depth to 70-87
  occurrence and description of 32,55
Gordon well, history of 45
Greenbrier limestone, correlation of 25,49
  description of 27
Greene formation, occurrence and description of 11,12-14
  section of 13

H.

Hackett, coal near, analysis of 102
Hallam Construction Company, quarry of 129
Harding & Warrick bank, coal of, analysis of 97
Hawkins (Mrs. A. L.) well (31), data on 19-20,59
Hickman triangulation station, location of 138
Hillsboro triangulation station, location of 135
Horn's bank, coal from, analyses of 112
Houston, coal mines near, sections of 94
Hughes triangulation station, location of 136
Hundred-foot sand, correlation of 49
  occurrence and description of 3-9,52
Hurry-up sand, correlation of 49
Hyde (E. T.) well, section of, figure showing 22

I.

Isochore, definition of 42

J.

Jefferson triangulation station, location of 135
Jollytown coal, occurrence and description of 115

K.

Kittanning coal, occurrence and description of 117
  water in 134
Kittanning sandstone, correlation of 49,50
Kountz No. 1 well (174), record of 56
Krepp triangulation station, location of 134

L.

Liddell's bank, coal from, analysis of 97
Limestone, analyses of 119,121,127
  occurrence and description of 118-128
  uses of 118-119
  views of 120
Linden field, location and description of 44
Literature, list of 140
Little Dunkard sand, correlation of 49
  occurrence and description of 50
Little Tenmile Creek, sandstone on, view of 128
Little Washington coal, occurrence and description of 113
Lone Pine, sandstone at, view of 128
Lower Productive Measures, occurrence of 24
Luse well, record of 29,31
  section of, figure showing 22

M.

McDonald sand, correlation of 49
McDonald triangulation station, location of 136

Page.

- McLain's bank, coal from, analysis of 96
  - coal of, section of 93
- Mahoning sandstone, correlation of 21, 49
- Manifold mine, coal from, analysis of 96
  - coal of, section of 92-93
- Manifold sand. *See* Big Injun sand.
- Manifold wells, data on 46
- Manufacturers Light and Heat Company, operations of 45-47
- Map, geologic, of quadrangle ...... Pocket
- Mapletown, coal near, analyses of 104
- Mapletown coal, correlation of 49
  - depth to 70-87
- Mauch Chunk formation, occurrence and description of 11, 25-27
  - oil and gas sands in 49
  - sections of 26
  - unconformity between Pottsville and 27, 42
- Meadowlands, oil storage at 47, 61
- Meadowlands mine, sections of 93
- Meridian marks, location of 138
- Miller (J. M.) well, section of, figure showing. 22
- Mineral resources, description of 42-134
- Mississippian rocks, occurrence and description of 25-30
- Mitchell, (A. C.) well, record of 26, 30, 117
  - section of, figure showing 22
- Monongahela formation, limestones in 119-121
  - occurrence and description of 11, 15-19
  - oil and gas sands in 49
  - sections of 15-17
- Monongahela Gas Company, operations of .. 47
  - thickness of 18
- Moniger's (J.) bank, coal of, section of 112
- Morgan Oil Co., development by 45
- Morgantown sandstone, correlation of 21, 49
- Morris Township (Greene County), wells in, records of 72-73
- Morris Township (Washington County), wells in, records of 72-73
- Mount Morris limestone, occurrence and description of 121-122
- Mountain sand. *See* Big Injun sand.
- Murphy sand, correlation of 21, 49
  - occurrence and description of 49

N.

- Nineveh syncline, location and description of 41
- Nineveh Thirty-foot sand, correlation of ... 49
- North Franklin Township, wells in, records of 74-75
- North Strabane Township, wells in, records of 74-77
- Nottingham mine, coal from, analysis of ... 96
  - coal of, section in 95
- Nottingham Township, wells in, records of. 76-77

O.

- Odell, limestone near, section of 127
- Oil, character of 65-66
  - development of, history of 44-47
  - distribution of 42-44
    - map showing 43
  - occurrence of 10-11, 42-88
    - mode of 48
    - theory of 62-65

Page.

- Oil, origin of 65
  - production of 59-62
  - rocks containing 47-59
- Oil and gas fields, distribution of 42-44
  - distribution of, map showing 43
- Oil and gas sands, names and correlation of. 49
- Oliphant (F. H.) on natural gas 66
- Orton, Edward, on oil and gas occurrence.. 62

P.

- Patterson's bank, coal from, analysis of.... 97
- Pencil cave, occurrence and description of. 27
- Pennsylvanian rocks, occurrence and description of 15-25
- People's Light and Heat Company, development by 45
- Permian rocks, occurrence and description of 11-15
- Petroleum. *See* Oil.
- Philadelphia Company, operations of 47
- Pigeon Creek, reservoir on 131, 132
- Pigeon Creek syncline. *See* Waynesburg syncline.
- Pinhook coal. *See* Waynesburg coal.
- Pittsburg coal, analyses of 96-97
  - area of, map showing 89
  - depth to 70-87
  - development of 98-101
  - occurrence and description of 10, 88-101
  - outcrop of 10
    - view of 128
  - persistency of 11
  - quality of 95-98
  - relation of Gantz sand and, figure showing 53
  - sections of, figures showing 92
  - structure of 38-42
  - thickness of 91
  - water in 134
- Pittsburg sandstone, occurrence and description of 128
- Pocono formation, occurrence and description of 11, 28-30
  - oil and gas sands in 49
  - water in 133
  - sections of 28-29
- Pollock triangulation station, location of.. 135
- Portland cement, limestone for 118
- Pottsville formation, occurrence and description of 11, 25
  - oil and gas sands in 49
  - unconformity between Mauch Chunk and 25, 27
  - water in 133
- Productive Measures, occurrence of 15, 24
- Prosperity limestone, occurrence and description of 12, 128

R.

- Railroads, routes of 9, 10
- Records of wells 70-87
- Redstone coal, analyses of 102, 103
  - occurrence and description of 101-103
  - section of, figures showing 102
- Richards (H. H.) No. 1 well (293), data on . 59
- Roger's bank, coal of, section of 112
- Ryerson Station, coal near, analysis of 115

S. Page.

Salt sand, correlation of ... 25, 49
  depth to ... 70-87
  occurrence and description of ... 50
  persistency of ... 11
Saltsburg sandstone, correlation of ... 21, 49, 50
"Sands," oil and gas, meaning of ... 22
Sandstone, occurrence and description of . 128-129
  views of ... 128
Second sand, correlation of ... 49
Sewickley coal, analyses of ... 104
  correlation of ... 49
  occurrence and description of ... 103-104
  section of, figure showing ... 102
Shale, occurrence and description of ... 130
Shannon, triangulation station, location of. 138
"Shells," meaning of ... 21
Shepler, triangulation station, location of. 137-138
Sixth sand, correlation of ... 49, 58
Smith (Moses) diamond-drill hole, coal from, analysis of ... 97
  record of ... 16
Smith Run, limestone on, view of ... 120
Somerset Township, wells in, records of ... 76-77
South Franklin Township, wells in, records of ... 76-77
South Strabane Township, wells in, records of ... 78-84
Southwest Pennsylvania Pipe Lines, storage tanks of ... 47
Spirit-level data, description of ... 138-139
Springs, occurrence of ... 133
Squaw sand, correlation of ... 49
  occurrence and description of ... 29, 52
Stevenson, J. J., on coal ... 102, 104, 112, 114, 115
  on limestone ... 120, 126
  on structure ... 38, 40
  sections by ... 12-14, 17
Stratigraphy of quadrangle ... 11-36
Structure, description of ... 36-42
  map showing ... 38
Structure contours, explanation of ... 36-38
Sub-Blairsville beds. *See* Catskill beds.
Sulphur in coal, occurrence of ... 98

T.

Taylorstown, coal near, analysis of ... 115
Teeples (I.) bank, coal from, analysis of ... 103
Tenmile coal, development of ... 13
  occurrence and description of ... 115
Thayer well, production of ... 46
Third sand, correlation of ... 49
Thirty-foot sand, correlation of ... 49
  depth to ... 70-87
  occurrence and description of ... 29, 52
  wells to ... 47
Thompson (George) well No. 1 (309), data on 59
Thompson (J. L.) well No. 1, water in ... 134
  well No. 3 (46), record of ... 31
    section of, figure showing ... 22
  well No. 4, (47), record of ... 28
  well No. 5 (48), record of ... 22, 24, 26
    section of, figure showing ... 22
Thompson's (T.) bank, coal of, analysis of. 97
Topographic data, details of ... 134-139
Topography, description of ... 9-10
Triangulation stations, location of ... 134-138
  location of, figure showing ... 134

U.

Ulery (W. H.) bore hole, coal from, analysis of ... 97
Union Stone and Brick Company plant of.. 130
Union Township, wells in, records of .. 84-85
Union triangulation station, location of .. 136
Uniontown coal, occurrence and description of ... 104
Upper Freeport coal, correlation of ... 49
  depth to ... 70-87, 116-117
  occurrence and description of ... 116-117
  water in ... 134
Upper Productive Measures, occurrence of.. 15
Upper Washington limestone, persistence of ... 11

V.

Valleys, importance of ... 10
Verner sand, gas from ... 84

W.

Warren sands, correlation of ... 49
Washington, coal in ... 116
  limestones at and near, sections of. 125, 126, 127
  sections in and near ... 14, 17
  water supply of ... 131-132
Washington anticline, location and description of ... 41
Washington coal, analyses of ... 115
  occurrence and description of ... 113-115
  section of ... 114
    figures showing ... 102
Washington County, development of oil and gas in ... 44-47
Washington County Eureka Oil Company, development by ... 44-45
Washington Daily Reporter, information from ... 44, 46
Washington formation, occurrence and description of ... 11, 14-15
  oil and gas sands in ... 49
  sections of ... 14
Washington limestones, occurrence and description of ... 122
  outcrop of, view of ... 120
  sections of ... 122-123, 125, 126, 127
Washington oil and gas field, development in ... 45-47
  location and description of ... 43-44
  production of ... 60
  structure in ... 63-64
  view in ... 44
Water-bearing horizons, positions of ... 133-134
Waterfall, view of ... 120
Water resources, occurrence and description of ... 130-134
Waynesburg coal, analyses of ... 112
  depth to ... 70-87, 106-107
  occurrence and description of ... 105-112
  quality of ... 111-112
  relations of Pittsburg coal and ... 105-106

Page.
Waynesburg coal, sections of 108, 110, 111
  figures showing 106
  thickness of 107-111
Waynesburg "A" coal, occurrence and description of 112-113
  sections of 113
    figure showing 102
Waynesburg "B" coal, occurrence and description of 113
Waynesburg limestone, occurrence and description of 121
Waynesburg sandstone, correlation of 49
  occurrence and description of 128-129
  persistence of 11
  view of 128
Waynesburg syncline, location and description of 39-40
Wells, deep, depth of 48
  information from 19
  records of 68-87
    value of 67-68
  production of 60

Page.
Wells, sections of, figures showing 22
  water from, use of 132-133
West Bethlehem Township, wells in, records of 84-87
West Brownsville, section at 15
West Pike Run Township, wells in, records of 86-87
Wheeler triangulation station, location of .. 137
White, I. C., correlations by 36
  on coal 115
  on geology 40
  on limestone 121, 122
  on natural gas 66-67
  on oil and gas 62
Willetts wells, data on 46
  view of 44

Z.

Zollarsville gas field, development in 47
  location and description of 44
  production of 61
  structure in 64-65

CLASSIFICATION OF THE PUBLICATIONS OF THE UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 300.]

The publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists can be had on application.

Most of the above publications can be obtained or consulted in the following ways:

1. A limited number are delivered to the Director of the Survey, from whom they can be obtained, free of charge (except classes 2, 7, and 8), on application.
2. A certain number are delivered to Senators and Representatives in Congress, for distribution.
3. Other copies are deposited with the Superintendent of Documents, Washington, D. C., from whom they can be had at prices slightly above cost.
4. Copies of all Government publications are furnished to the principal public libraries in the large cities throughout the United States, where they can be consulted by those interested.

The Professional Papers, Bulletins, and Water-Supply Papers treat of a variety of subjects, and the total number issued is large. They have therefore been classified into the following series: A, Economic geology; B, Descriptive geology; C, Systematic geology and paleontology; D, Petrography and mineralogy; E, Chemistry and physics; F, Geography; G, Miscellaneous; H, Forestry; I, Irrigation; J, Water storage; K, Pumping water; L, Quality of water; M, General hydrographic investigations; N, Water power; O, Underground waters; P, Hydrographic progress reports. This paper is the eighty-sixth in Series A and the one hundred and fifth in Series B, the complete lists of which follow (PP=Professional Paper; B=Bulletin; WS=Water-Supply Paper).

SERIES A, ECONOMIC GEOLOGY.

B 21. Lignites of Great Sioux Reservation: Report on region between Grand and Moreau rivers, Dakota, by Bailey Willis. 1885. 16 pp., 5 pls. (Out of stock.)

B 46. Nature and origin of deposits of phosphate of lime, by R. A. F. Penrose, jr., with introduction by N. S. Shaler. 1888. 143 pp. (Out of stock.)

B 65. Stratigraphy of the bituminous coal field of Pennsylvania, Ohio, and West Virginia, by I. C. White. 1891. 212 pp., 11 pls. (Out of stock.)

B 111. Geology of Big Stone Gap coal field of Virginia and Kentucky, by M. R. Campbell. 1893. 106 pp., 6 pls. (Out of stock.)

B 132. The disseminated lead ores of southeastern Missouri, by Arthur Winslow. 1896. 31 pp. (Out of stock.)

B 138. Artesian-well prospects in Atlantic Coastal Plain region, by N. H. Darton. 1896. 228 pp., 19 pls.

B 139. Geology of Castle Mountain mining district, Montana, by W. H. Weed and L. V. Pirsson. 1896. 164 pp., 17 pls.

B 143. Bibliography of clays and the ceramic arts, by J. C. Branner. 1896. 114 pp.

B 164. Reconnaissance on the Rio Grande coal fields of Texas, by T. W. Vaughan, including a report on igneous rocks from the San Carlos coal field, by E. C. E. Lord. 1900. 100 pp., 11 pls. (Out of stock.)

B 178. El Paso tin deposits, by W. H. Weed. 1901. 15 pp., 1 pl.

B 180. Occurrence and distribution of corundum in United States, by J. H. Pratt. 1901. 98 pp., 14 pls. (Out of stock; see No. 269.)

B 182. A report on the economic geology of the Silverton quadrangle, Colorado, by F. L. Ransome. 1901. 266 pp., 16 pls. (Out of stock.)

B 184. Oil and gas fields of the western interior and northern Texas Coal Measures and of the Upper Cretaceous and Tertiary of the western Gulf coast, by G. I. Adams. 1901. 64 pp., 10 pls. (Out of stock.)

B 193. The geological relations and distribution of platinum and associated metals, by J. F. Kemp. 1902. 95 pp., 6 pls.

B 198. The Berea grit oil sand in the Cadiz quadrangle, Ohio, by W. T. Griswold. 1902. 43 pp., 1 pl. (Out of stock.)

PP 1. Preliminary report on the Ketchikan mining district, Alaska, with an introductory sketch of the geology of southeastern Alaska, by A. H. Brooks. 1902. 120 pp., 2 pls.

B 200. Reconnaissance of the borax deposits of Death Valley and Mohave Desert, by M. R. Campbell. 1902. 23 pp., 1 pl. (Out of stock.)

B 202. Tests for gold and silver in shales from western Kansas, by Waldemar Lindgren. 1902. 21 pp. (Out of stock.)

PP 2. Reconnaissance of the northwestern portion of Seward Peninsula, Alaska, by A. J. Collier. 1902. 70 pp., 11 pls.

PP 10. Reconnaissance from Fort Hamlin to Kotzebue Sound, Alaska, by way of Dall, Kanuti, Allen, and Kowak rivers, by W. C. Mendenhall. 1902. 68 pp., 10 pls.

PP 11. Clays of the United States east of the Mississippi River, by Heinrich Ries. 1903. 298 pp., 9 pls.

PP 12. Geology of the Globe copper district, Arizona, by F. L. Ransome. 1903. 168 pp., 27 pls.

B 212. Oil fields of the Texas-Louisiana Gulf Coastal Plain, by C. W. Hayes and William Kennedy. 1903. 174 pp., 11 pls. (Out of stock.)

B 213. Contributions to economic geology, 1902; S. F. Emmons and C. W. Hayes, geologists in charge. 1903. 449 pp. (Out of stock.)

PP 15. The mineral resources of the Mount Wrangell district, Alaska, by W. C. Mendenhall and F. C. Schrader. 1903. 71 pp., 10 pls.

B 218. Coal resources of the Yukon, Alaska, by A. J. Collier. 1903. 71 pp., 6 pls.

B 219. The ore deposits of Tonopah, Nevada (preliminary report), by J. E. Spurr. 1903. 31 pp., 1 pl. (Out of stock.)

PP 20. A reconnaissance in northern Alaska in 1901, by F. C. Schrader. 1904. 139 pp., 16 pls.

PP 21. Geology and ore deposits of the Bisbee quadrangle, Arizona, by F. L. Ransome. 1904. 168 pp., 29 pls.

B 223. Gypsum deposits in the United States, by G. I. Adams and others. 1904. 129 pp., 21 pls.

PP 24. Zinc and lead deposits of northern Arkansas, by G. I. Adams. 1904. 118 pp., 27 pls.

PP 25. Copper deposits of the Encampment district, Wyoming, by A. C. Spencer. 1904. 107 pp., 2 pls.

B 225. Contributions to economic geology, 1903, by S. F. Emmons and C. W. Hayes, geologists in charge. 1904. 527 pp., 1 pl. (Out of stock.)

PP 26. Economic resources of the northern Black Hills, by J. D. Irving, with contributions by S. F. Emmons and T. A. Jaggar, jr. 1904. 222 pp., 20 pls.

PP 27. A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho, by Waldemar Lindgren. 1904. 123 pp., 15 pls.

B 229. Tin deposits of the York region, Alaska, by A. J. Collier. 1904. 61 pp., 7 pls.

B 236. The Porcupine placer district, Alaska, by C. W. Wright. 1904. 35 pp., 10 pls.

B 238. Economic geology of the Iola quadrangle, Kansas, by G. I. Adams, Erasmus Haworth, and W. R. Crane. 1904. 83 pp., 11 pls.

B 243. Cement materials and industry of the United States, by E. C. Eckel. 1905. 395 pp., 15 pls.

B 246. Zinc and lead deposits of northwestern Illinois, by H. Foster Bain. 1904. 56 pp., 5 pls.

B 247. The Fairhaven gold placers of Seward Peninsula, Alaska, by F. H. Moffit. 1905. 85 pp., 14 pls.

B 249. Limestones of southeastern Pennsylvania, by F. G. Clapp. 1905. 52 pp., 7 pls.

B 250. The petroleum fields of the Pacific coast of Alaska, with an account of the Bering River coal deposits, by G. C. Martin. 1905. 65 pp., 7 pls.

B 251. The gold placers of the Fortymile, Birch Creek, and Fairbanks regions, Alaska, by L. M. Prindle. 1905. 89 pp., 16 pls.

WS 117. The lignite of North Dakota and its relation to irrigation, by F. A. Wilder. 1905. 59 pp., 8 pls.

PP 36. The lead, zinc, and fluorspar deposits of western Kentucky, by E. O. Ulrich and W. S. T. Smith. 1905. 218 pp., 15 pls.

PP 38. Economic geology of the Bingham mining district, Utah, by J. M. Boutwell, with a chapter on areal geology, by Arthur Keith, and an introduction on general geology, by S. F. Emmons. 1905. 413 pp., 49 pls.

PP 41. Geology of the central Copper River region, Alaska, by W. C. Mendenhall. 1905. 133 pp., 20 pls.

B 254. Report of progress in the geological resurvey of the Cripple Creek district, Colorado, by Waldemar Lindgren and F. L. Ransome. 1904. 36 pp.

B 255. The fluorspar deposits of southern Illinois, by H. Foster Bain. 1905. 75 pp., 6 pls.

B 256. Mineral resources of the Elders Ridge quadrangle, Pennsylvania, by R. W. Stone. 1905. 86 pp., 12 pls.

B 259. Report on progress of investigations of mineral resources of Alaska in 1904, by A. H. Brooks and others. 1905. 196 pp., 3 pls.
B 260. Contributions to economic geology, 1904; S. F. Emmons and C. W. Hayes, geologists in charge. 1905. 620 pp., 4 pls.
B 261. Preliminary report on the operations of the coal-testing plant of the United States Geological Survey at the Louisiana Purchase Exposition, St. Louis, Mo., 1904; E. W. Parker, J. A. Holmes, and M. R. Campbell, committee in charge. 1905. 172 pp. (Out of stock.)
B 263. Methods and cost of gravel and placer mining in Alaska, by C. W. Purington. 1905. 273 pp., 42 pls.
PP 42. Geology of the Tonopah mining district, Nevada, by J. E. Spurr. 1905. 295 pp., 24 pls.
PP 43. The copper deposits of the Clifton-Morenci district, Arizona, by Waldemar Lindgren. 1905. 375 pp., 25 pls.
B 264. Record of deep-well drilling for 1904, by M. L. Fuller, E. F. Lines, and A. C. Veatch. 1905. 106 pp.
B 265. Geology of the Boulder district, Colorado, by N. M. Fenneman. 1905. 101 pp., 5 pls.
B 267. The copper deposits of Missouri, by H. Foster Bain and E. O. Ulrich. 1905. 52 pp., 1 pl.
B 269. Corundum and its occurrence and distribution in the United States (a revised and enlarged edition of Bulletin No. 180), by J. H. Pratt. 1906. 175 pp., 18 pls.
PP 48. Report on the operations of the coal-testing plant of the United States Geological Survey at the Louisiana Purchase Exposition, St. Louis, Mo., 1904; E. W. Parker, J. A. Holmes, M. R. Campbell, committee in charge. 1906. (In 3 parts.) 1492 pp., 13 pls.
B 275. Slate deposits and slate industry of the United States, by T. N. Dale, with sections by E. C. Eckel, W. F. Hillebrand, and A. T. Coons. 1906. 154 pp., 25 pls.
PP 49. Geology and mineral resources of part of the Cumberland Gap coal field, Kentucky, by G. H. Ashley and L. C. Glenn, in cooperation with the State Geological Department of Kentucky, C. J. Norwood, curator. 1906. 239 pp., 40 pls.
B 277. Mineral resources of Kenai Peninsula, Alaska: Gold fields of the Turnagain Arm region, by F. H. Moffit; Coal fields of the Kachemak Bay region, by R. W. Stone. 1906. 80 pp., 18 pls. (Out of stock.)
B 278. Geology and coal resources of the Cape Lisburne region, Alaska, by A. J. Collier. 1906. 54 pp., 9 pls.
B 279. Mineral resources of the Kittanning and Rural Valley quadrangles, Pennsylvania, by Charles Butts. 1906. 198 pp., 11 pls.
B 280. The rampart gold placer region, Alaska, by L. M. Prindle and F. L. Hess. 1906. 54 pp., 7 pls.
B 282. Oil fields of the Texas-Louisiana Gulf Coastal Plain, by N. M. Fenneman. 1906. 146 pp., 11 pls.
PP 51. Geology of the Bighorn Mountains, by N. H. Darton. 1906. 129 pp., 47 pls.
B 283. Geology and mineral resources of Mississippi, by A. F. Crider. 1906. 99 pp., 4 pls.
B 284. Report on progress of investigations of the mineral resources of Alaska in 1905, by A. H. Brooks and others. 1906. 169 pp., 14 pls.
B 285. Contributions to Economic Geology, 1905; S. F. Emmons and E. C. Eckel, geologists in charge. 1906. 506 pp., 13 pls. (Out of stock.)
B 286. Economic geology of the Beaver quadrangle, Pennsylvania, by L. H. Woolsey. 1906. 132 pp., 8 pls.
B 287. Juneau gold belt, Alaska, by A. C. Spencer, and A reconnaissance of Admiralty Island, Alaska, by C. W. Wright. 1906. 161 pp., 27 pls.
PP 54. The geology and gold deposits of the Cripple Creek district, Colorado, by W. Lindgren and F. L. Ransome. 1906. 516 pp., 29 pls.
PP 55. Ore deposits of the Silver Peak quadrangle, Nevada, by J. E. Spurr. 1906. 174 pp., 24 pls.
B 289. A reconnaissance of the Matanuska coal field, Alaska, in 1905, by G. C. Martin. 1906. 34 pp., 5 pls.
B 290. Preliminary report on the operations of the fuel-testing plant of the United States Geological Survey at St. Louis, Mo., 1905, by J. A. Holmes. 1906. 240 pp.
B 293. A reconnaissance of some gold and tin deposits of the southern Appalachians, by L. C. Graton, with notes on the Dahlonega mines, by W. Lindgren. 1906. 134 pp., 9 pls.
B 294. Zinc and lead deposits of the upper Mississippi Valley, by H. Foster Bain. 1906. 155 pp., 16 pls.
B 295. The Yukon-Tanana region, Alaska, description of Circle quadrangle, by L. M. Prindle. 1906. 27 pp., 1 pl.
B 296. Economic geology of the Independence quadrangle, Kansas, by Frank C. Schrader and Erasmus Haworth. 1906. 74 pp., 6 pls.
B 297. The Yampa coal field, Routt County, Colo., by N. M. Fenneman, Hoyt S. Gale, and M. R. Campbell. 1906. 96 pp., 9 pls.
B 298. Record of deep-well drilling for 1905, by Myron L. Fuller and Samuel Sanford. 1906. 299 pp.
B 300. Economic geology of the Amity quadrangle, in eastern Washington County, Pa., by Frederick G. Clapp. 1907. 145 pp., 8 pls.

SERIES B, DESCRIPTIVE GEOLOGY.

B 23. Observations on the junction between the Eastern sandstone and the Keweenaw series on Keweenaw Point, Lake Superior, by R. D. Irving and T. C. Chamberlin. 1885. 124 pp., 17 pls. (Out of stock.)

B 33. Notes on geology of northern California, by J. S. Diller. 1886. 23 pp. (Out of stock.)

B 39. The upper beaches and deltas of Glacial Lake Agassiz, by Warren Upham. 1887. 84 pp., 1 pl. (Out of stock.)

B 40. Changes in river courses in Washington Territory due to glaciation, by Bailey Willis. 1887. 10 pp., 4 pls. (Out of stock.)

B 45. The present condition of knowledge of the geology of Texas, by R. T. Hill. 1887. 94 pp. (Out of stock.)

B 53. The geology of Nantucket, by N. S. Shaler. 1889. 55 pp., 10 pls. (Out of stock.)

B 57. A geological reconnaissance in southwestern Kansas, by Robert Hay. 1890. 49 pp., 2 pls.

B 58. The glacial boundary in western Pennsylvania, Ohio, Kentucky, Indiana, and Illinois, by G. F. Wright, with introduction by T. C. Chamberlin. 1890. 112 pp., 8 pls. (Out of stock.)

B 67. The relations of the traps of the Newark system in the New Jersey region, by N. H. Darton. 1890. 82 pp. (Out of stock.)

B 104. Glaciation of the Yellowstone Valley north of the Park, by W. H. Weed. 1893. 41 pp., 4 pls.

B 108. A geological reconnaissance in central Washington, by I. C. Russell. 1893. 108 pp., 12 pls. (Out of stock.)

B 119. A geological reconnaissance in northwest Wyoming, by G. H. Eldridge. 1894. 72 pp., 4 pls.

B 137. The geology of the Fort Riley Military Reservation and vicinity, Kansas, by Robert Hay. 1896. 35 pp., 8 pls.

B 144. The moraines of the Missouri Coteau and their attendant deposits, by J. E. Todd. 1896. 71 pp., 21 pls.

B 158. The moraines of southeastern South Dakota and their attendant deposits, by J. E. Todd. 1899. 171 pp., 27 pls.

B 159. The geology of eastern Berkshire County, Massachusetts, by B. K. Emerson. 1899. 139 pp., 9 pls.

B 165. Contributions to the geology of Maine, by H. S. Williams and H. E. Gregory. 1900. 212 pp., 14 pls.

WS 70. Geology and water resources of the Patrick and Goshen Hole quadrangles in eastern Wyoming and western Nebraska, by G. I. Adams. 1902. 50 pp., 11 pls.

B 199. Geology and water resources of the Snake River Plains of Idaho, by I. C. Russell. 1902. 192 pp., 25 pls.

PP 1. Preliminary report on the Ketchikan mining district, Alaska, with an introductory sketch of the geology of southeastern Alaska, by A. H. Brooks. 1902. 120 pp., 2 pls.

PP 2. Reconnaissance of the northwestern portion of Seward Peninsula, Alaska, by A. J. Collier. 1902. 70 pp., 11 pls.

PP 3. Geology and petrography of Crater Lake National Park, by J. S. Diller and H. B. Patton. 1902. 167 pp., 19 pls.

PP 10. Reconnaissance from Fort Hamlin to Kotzebue Sound, Alaska, by way of Dall, Kanuti, Allen, and Kowak rivers, by W. C. Mendenhall. 1902. 68 pp., 10 pls.

PP 11. Clays of the United States east of the Mississippi River, by Heinrich Ries. 1903. 298 pp., 9 pls.

PP 12. Geology of the Globe copper district, Arizona, by F. L. Ransome. 1903. 168 pp., 27 pls.

PP 13. Drainage modifications in southeastern Ohio and adjacent parts of West Virginia and Kentucky, by W. G. Tight. 1903. 111 pp., 17 pls. (Out of stock.)

B 208. Descriptive geology of Nevada south of the fortieth parallel and adjacent portions of California, by J. E. Spurr. 1903. 229 pp., 8 pls.

B 209. Geology of Ascutney Mountain, Vermont, by R. A. Daly. 1903. 122 pp., 7 pls.

WS 78. Preliminary report on artesian basins in southwestern Idaho and southeastern Oregon, by I. C. Russell. 1903. 51 pp., 2 pls.

PP 15. Mineral resources of the Mount Wrangell district, Alaska, by W. C. Mendenhall and F. C. Schrader. 1903. 71 pp., 10 pls.

PP 17. Preliminary report on the geology and water resources of Nebraska west of the one hundred and third meridian, by N. H. Darton. 1903. 69 pp., 43 pls.

B 217. Notes on the geology of southwestern Idaho and southeastern Oregon, by I. C. Russell. 1903. 83 pp., 18 pls.

B 219. The ore deposits of Tonopah, Nevada (preliminary report), by J. E. Spurr. 1903. 31 pp., 1 pl.

PP 20. A reconnaissance in northern Alaska in 1901, by F. C. Schrader. 1904. 139 pp., 16 pls.

PP 21. The geology and ore deposits of the Bisbee quadrangle, Arizona, by F. L. Ransome. 1904. 168 pp., 29 pls.

WS 90. Geology and water resources of part of the lower James River Valley, South Dakota, by J. E. Todd and C. M. Hall. 1904. 47 pp., 23 pls.

PP 25. The copper deposits of the Encampment district, Wyoming, by A. C. Spencer. 1904. 107 pp., 2 pls.

PP 26. Economic resources of the northern Black Hills, by J. D. Irving, with contributions by S. F. Emmons and T. A. Jaggar, jr. 1904. 222 pp., 20 pls.

PP 27. A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho, by Waldemar Lindgren. 1904. 122 pp., 15 pls.

PP 31. Preliminary report on the geology of the Arbuckle and Wichita mountains in Indian Territory and Oklahoma, by J. A. Taff, with an appendix on reported ore deposits in the Wichita Mountains, by H. F. Bain. 1904. 97 pp., 8 pls.

B 235. A geological reconnaissance across the Cascade Range near the forty-ninth parallel, by G. O. Smith and F. C. Calkins. 1904. 103 pp., 4 pls.

B 236. The Porcupine placer district, Alaska, by C. W. Wright. 1904. 35 pp., 10 pls.

B 237. Igneous rocks of the Highwood Mountains, Montana, by L. V. Pirsson. 1904. 208 pp., 7 pls.

B 238. Economic geology of the Iola quadrangle, Kansas, by G. I. Adams, Erasmus Haworth, and W. R. Crane. 1904. 83 pp., 1 pl.

PP 32. Geology and underground water resources of the central Great Plains, by N. H. Darton. 1905. 433 pp., 72 pls.

WS 110. Contributions to hydrology of eastern United States, 1904; M. L. Fuller, geologist in charge. 1905. 211 pp., 5 pls.

B 242. Geology of the Hudson Valley between the Hoosic and the Kinderhook, by T. Nelson Dale. 1904. 63 pp., 3 pls.

PP 34. The Delavan lobe of the Lake Michigan glacier of the Wisconsin stage of glaciation and associated phenomena, by W. C. Alden. 1904. 106 pp., 15 pls.

PP 35. Geology of the Perry Basin in southeastern Maine, by G. O. Smith and David White. 1905. 107 pp., 6 pls.

B 243. Cement materials and industry of the United States, by E. C. Eckel. 1905. 395 pp., 15 pls.

B 246. Zinc and lead deposits of northeastern Illinois, by H. F. Bain. 1904. 56 pp., 5 pls.

B 247. The Fairhaven gold placers of Seward Peninsula, Alaska, by F. H. Moffit. 1905. 85 pp., 14 pls.

B 249. Limestones of southwestern Pennsylvania, by F. G. Clapp. 1905. 52 pp.. 7 pls.

B 250. The petroleum fields of the Pacific coast of Alaska, with an account of the Bering River coal deposit, by G. C. Martin. 1905. 65 pp., 7 pls.

B 251. The gold placers of the Fortymile, Birch Creek, and Fairbanks regions, Alaska, by L. M. Prindle. 1905. 16 pp., 16 pls.

WS 118. Geology and water resources of a portion of east-central Washington, by F. C. Calkins. 1905. 96 pp., 4 pls.

B 252. Preliminary report on the geology and water resources of central Oregon, by I. C. Russell. 1905. 138 pp., 24 pls.

PP 36. The lead, zinc, and fluorspar deposits of western Kentucky, by E. O. Ulrich and W. S. Tangier Smith. 1905. 218 pp., 15 pls.

PP 38. Economic geology of the Bingham mining district of Utah, by J. M. Boutwell, with a chapter on areal geology, by Arthur Keith, and an introduction on general geology, by S. F. Emmons. 1905. 413 pp., 49 pls.

PP 41. The geology of the central Copper River region, Alaska, by W. C. Mendenhall. 1905. 133 pp., 20 pls.

B 254. Report of progress in the geological resurvey of the Cripple Creek district, Colorado, by Waldemar Lindgren and F. L. Ransome. 1904. 36 pp.

B 255. The fluorspar deposits of southern Illinois, by H. Foster Bain. 1905. 75 pp., 6 pls.

B 256. Mineral resources of the Elders Ridge quadrangle, Pennsylvania, by R. W. Stone. 1905. 85 pp., 12 pls.

B 257. Geology and paleontology of the Judith River beds, by T. W. Stanton and J. B. Hatcher, with a chapter on the fossil plants, by F. H. Knowlton. 1905. 174 pp., 19 pls.

PP 42. Geology of the Tonopah mining district, Nevada, by J. E. Spurr. 1905. 295 pp., 24 pls.

WS 123. Geology and underground water conditions of the Jornada del Muerto, New Mexico, by C. R. Keyes. 1905. 42 pp., 9 pls.

WS 136. Underground waters of Salt River Valley, Arizona, by W. T. Lee. 1905. 194 pp., 24 pls.

PP 43. The copper deposits of Clifton-Morenci, Arizona, by Waldemar Lindgren. 1905. 375 pp., 25 pls.

B 265. Geology of the Boulder district, Colorado, by N. M. Fenneman. 1905. 101 pp., 5 pls.

B 267. The copper deposits of Missouri, by H. F. Bain and E. O. Ulrich. 1905. 52 pp., 1 pl.

PP 44. Underground water resources of Long Island, New York, by A. C. Veatch, and others. 1905. 394 pp., 34 pls.

WS 148. Geology and water resources of Oklahoma, by C. N. Gould. 1905. 178 pp., 22 pls.

B 270. The configuration of the rock floor of Greater New York, by W. H. Hobbs. 1905. 96 pp., 5 pls.

B 272. Taconic physiography, by T. M. Dale. 1905. 52 pp., 14 pls.

PP 45. The geography and geology of Alaska, a summary of existing knowledge, by A. H. Brooks, with a section on climate, by Cleveland Abbe, jr., and a topographic map and description thereof, by R. M. Goode. 1905. 327 pp., 34 pls.

B 273. The drumlins of southeastern Wisconsin (preliminary paper), by W. C. Alden. 1905. 46 pp., 9 pls.

PP 46. Geology and underground water resources of northern Louisiana and southern Arkansas, by A. C. Veatch. 1906. 422 pp., 51 pls.

PP 49. Geology and mineral resources of part of the Cumberland Gap coal field, Kentucky, by G. H. Ashley and L. C. Glenn, in cooperation with the State Geological Department of Kentucky, C. J. Norwood, curator. 1906. 239 pp., 40 pls.

PP 50. The Montana lobe of the Keewatin ice sheet, by F. H. H. Calhoun. 1906. 62 pp., 7 pls.

B 277. Mineral resources of Kenai Peninsula, Alaska: Gold fields of the Turnagain Arm region, by F. H. Moffit; and the coal fields of the Kachemak Bay region, by R. W. Stone. 1906. 80 pp., 18 pls. (Out of stock.)

WS 154. The geology and water resources of the eastern portion of the Panhandle of Texas, by C. N. Gould. 1906. 64 pp., 15 pls.

B 278. Geology and coal resources of the Cape Lisburne region, Alaska, by A. J. Collier. 1906. 54 pp., 9 pls.

B 279. Mineral resources of the Kittanning and Rural Valley quadrangles, Pennsylvania, by Charles Butts. 1906. 198 pp., 11 pls.

B 280. The Rampart gold placer region, Alaska, by L. M. Prindle and F. L. Hess. 1906. 54 pp., 7 pls.

B 282. Oil fields of the Texas-Louisiana Gulf Coastal Plain, by N. M. Fenneman. 1906. 146 pp. 11 pls.

WS 157. Underground water in the valleys of Utah Lake and Jordan River, Utah, by G. B. Richardson. 1906. 81 pp., 9 pls.

PP 51. Geology of the Bighorn Mountains by N. H. Darton. 1906. 129 pp., 47 pls.

WS 158. Preliminary report on the geology and underground waters of the Roswell artesian area, New Mexico by C. A. Fisher. 1906. 29 pp., 9 pls.

PP 52. Geology and underground waters of the Arkansas Valley in eastern Colorado, by N. H. Darton. 1906. 90 pp., 28 pls.

WS 159. Summary of underground-water resources of Mississippi, by A. F. Crider and L. C. Johnson. 1906. 86 pp., 6 pls.

PP 53. Geology and water resources of the Bighorn basin, Wyoming, by Cassius A. Fisher. 1906. 72 pp., 16 pls.

B 283. Geology and mineral resources of Mississippi, by A. F. Crider. 1906. 99 pp., 4 pls.

B 286. Economic geology of the Beaver quadrangle, Pennsylvania (southern Beaver and northwestern Allegheny counties), by L. H. Woolsey. 1906. 132 pp., 8 pls.

B 287. The Juneau Gold belt, Alaska, by A. C. Spencer, and a reconnaissance of Admiralty Island, Alaska, by C. W. Wright. 1906. 161 pp., 37 pls.

PP 54. The geology and gold deposits of the Cripple Creek district, Colorado, by W. Lindgren and F. L. Ransome. 1906. 516 pp., 29 pls.

PP 55. Ore deposits of the Silver Peak quadrangle, Nevada, by J. E. Spurr. 1906. 174 pp., 24 pls.

B 289. A reconnaissance of the Matanuska coal field, Alaska, in 1905, by G. C. Martin. 1906. 36 pp., 5 pls.

WS 164. Underground waters of Tennessee and Kentucky west of Tennessee River and of an adjacent area in Illinois, by L. C. Glenn. 1906. 173 pp., 7 pls.

B 293. A reconnaissance of some gold and tin deposits of the southern Appalachians, by L. C. Groton, with notes on the Dahlonega mines, by W. Lindgren. 1906. 134 pp., 9 pls.

B 294. Zinc and lead deposits of the upper Mississippi Valley, by H. Foster Bain. 1906. 155 pp., 16 pls.

B 295. The Yukon-Tanana region, Alaska, description of Circle quadrangle, by L. M. Prindle. 1906. 27 pp., 1 pl.

B 296. Economic geology of the Independence quadrangle, Kansas, by Frank C. Schrader and Erasmus Haworth. 1906. 74 pp., 6 pls.

WS 181. Geology and water resources of Owens Valley, California, by Willis T. Lee. 1906. 28 pp., 6 pls.

B 297. The Yampa coal field, Routt County, Colo., by N. M. Fenneman, Hoyt S. Gale, and M. R. Campbell. 1906. 96 pp., 9 pls.

B 300. Economic geology of the Amity quadrangle in eastern Washington County, Pa., by F. G. Clapp. 1906. 145 pp., 8 pls.

Correspondence should be addressed to

THE DIRECTOR,
UNITED STATES GEOLOGICAL SURVEY,
WASHINGTON, D. C.

FEBRUARY, 1907.

○

Bulletin No. 301 Series G, Miscellaneous, 30

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR

BIBLIOGRAPHY AND INDEX

OF

NORTH AMERICAN GEOLOGY, PALEONTOLOGY PETROLOGY, AND MINERALOGY

FOR

THE YEARS 1901-1905, INCLUSIVE

BY

FRED BOUGHTON WEEKS

WASHINGTON
GOVERNMENT PRINTING OFFICE
1906

CONTENTS.

Page.
Introduction........ 5
List of publications examined........ 6
Bibliography........ 11
Classified key to the index........ 383
Index........ 393

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR 1901-1905, INCLUSIVE.

By FRED BOUGHTON WEEKS.

INTRODUCTION.

This bulletin is a combination of the bibliographies published each year from 1901 to 1904, inclusive. These have appeared as Bulletins Nos. 203, 221, 240, and 271. With these the bibliography of the literature for the year 1905 has been combined. The papers have been arranged alphabetically by authors' names and the entries numbered consecutively under each author. In addition to the full title of the paper and an abbreviated reference to the publication in which it appears a brief statement of the contents is given when the title of the paper is not fully explanatory.

The index, in which reference to the bibliography is made by author and number of paper, is preceded by a key to its arrangement, showing the subject headings used and their subdivisions.

Mr. J. M. Nickles, who has assisted for the last three years in the preparation of these bibliographies, has performed similar services in the preparation of this bulletin. Its completeness and accuracy are largely due to his industry and attention to details.

LIST OF PUBLICATIONS EXAMINED.

Alabama Geological Survey: Index to Mineral Resources of Alabama, 1904; Bulletin nos. 7 and 8; Revised Map of the Southeastern Part of the Cahaba Coal Field, 1905. Montgomery, Ala.

American Academy of Arts and Sciences: Proceedings, vols. 36–41. Boston, Mass.

American Association for the Advancement of Science: Proceedings, vols. 50–54.

American Geographical Society: Bulletin, vols. 32–37. New York, N. Y.

American Geologist: vols. 27–36. Minneapolis, Minn.

American Institute of Mining Engineers: Transactions, vols. 30–35; Bimonthly Bulletin, nos. 1–6, 1905. New York, N. Y.

American Journal of Science: 4th ser., vols. 11–20. New Haven, Conn.

American Museum of Natural History: Bulletin, vol. 11, pt. 4; vol. 14; vol. 15, pt. 1; vol. 16; vol. 17; vol. 18, pts. 1 and 2; vols. 19–21; Journal, vols. 3–5; Memoirs; vol. 1, pts. 7 and 8. New York, N. Y.

American Naturalist: vols. 35–39. Boston, Mass.

American Paleontology: Bulletin, nos. 14–19. Ithaca, N. Y.

American Philosophical Society: Proceedings, vols. 40–49; Transactions, vol. 20; pts. 2 and 3; vol. 21, pt. 1. Philadelphia, Pa.

Annales des Mines: Mémoires, 6th ser., tomes 1–7. Paris, France.

Annals and Magazine of Natural History: 7th ser., vols. 8–16, London, England.

Appalachia: vol. 9, nos. 3 and 4; vol. 10; vol. 11, no. 1. Boston, Mass.

Apteryx: vol. 1, nos. 1 and 2. Providence, R. I.

Association of Engineering Societies: Journal, vols. 28–35. Philadelphia, Pa.

Bernice Puahi Bishop Museum: Memoirs, vol. 1; vol. 2, no. 2; Occasional Papers, vols. 1–2, no. 3. Honolulu, Hawaiian Islands.

Boston Society of Natural History: Proceedings, vol. 29, no. 15–32, no. 8; Memoirs, vol. 5, no. 11; vol. 6, no. 1; Occasional Papers, vol. 7, nos. 3–6. Boston, Mass.

Botanical Gazette: vols. 31–40. Chicago, Ill.

Buffalo Society of Natural Sciences: vol. 7, no. 1; vol. 8, nos. 1–3. Buffalo, N. Y.

California Academy of Sciences: Proceedings, 3d ser., vol. 1, no. 10; vol. 2, nos. 1 and 2; Memoirs, vols. 3 and 5, no. 1. San Francisco, Cal.

California Journal of Technology: vols. 2–6, no. 1. Berkeley, Cal.

California, University of, Department of Geology: Bulletin, vol. 2, no. 8–vol. 4, no. 13. Berkeley, Cal.

Canada: Geological Survey: Annual Reports, new ser., vols. 11–13; vol. 14; pts. B, O, J; vol. 15, pts. F, S; Summary Reports, 1900–1904; Mesozoic Fossils, vol. 1, pt. 5; Report on the Cambrian Rocks of Cape Breton; Catalogue of the Marine Invertebrata of Eastern Canada.

Canada, Royal Society: Proceedings and Transactions, 2d ser., vols. 6–10. Ottawa, Canada.

Canadian Institute: Transactions, vol. 7 and vol. 8, pt. 1. Toronto, Canada.

Canadian Mining Institute: Journal, vols. 4–7. Ottawa, Canada.

Canadian Mining Review: vols. 20–24. Ottawa, Canada.

Canadian Record of Science: vol. 8, no. 5–vol. 9, no. 4. Montreal, Canada.

Carnegie Institution of Washington: Yearbook, nos. 1–4. Washington, D. C.

Carnegie Museum: Annals, vols. 1–3; Memoirs, vols. 1 and 2, nos. 1–5. Pittsburg, Pa.

Centralblatt für Mineralogie, Geologie und Palaeontologie: 1902–1905. Stuttgart, Germany.

Chicago Academy of Sciences: Natural History Survey, Bulletin No. 5. Chicago, Ill.

Cincinnati Society of Natural History: Journal, vol. 20, nos. 1–4. Cincinnati, Ohio.

Colby College: Bulletin, vol. 1, supplement. Waterville, Me.

Colorado College Studies: vols. 9–11; Science series, nos. 42–46. Colorado Springs, Colo.

Colorado Mining Bureau: Bulletins, nos. 4 and 5; Report State Bureau of Mines, 1902. Denver, Colo.

Colorado School of Mines: Bulletin, vols. 1, 2, and 3, no. 1. Golden, Colo.

Colorado Scientific Society: Proceedings, vols. 6, 7, and 8, pp. 1–70. Denver, Colo.

Colorado, University of: Studies, vols. 1, 2, and 3 no. 1. Boulder, Colo.

Columbia University, Geological Department: Contributions, nos. 81–106. New York, N. Y.

Congrès Géologique International: VIII and IX, Compte Rendu. Paris and Wien.

Connecticut State Geological and Natural History Survey: Bulletins, nos. 1–5. Hartford, Conn.

Davenport Academy of Sciences: Proceedings, vols. 8 and 9. Davenport, Iowa.

Delaware County Institute of Science: Proceedings, vol. 1, no. 1. Media, Pa.

Denison University, Scientific Laboratories: Bulletin, vol. 11, articles 10 and 11; vol. 12; vol. 13, article 2. Granville, Ohio.

Drury College, Bradley Geological Field Station: Bulletin, vol. 1, pts. 1 and 2. Springfield, Mo.

Economic Geology: vol. 1, nos. 1–3. Lancaster, Pa.

Elisha Mitchell Scientific Society: Journal, vols. 17–21. Chapelhill, N. C.

Engineering and Mining Journal: vols. 71–80. New York, N. Y.

Engineering Association of the South: Transactions, vols. 12–16. Nashville, Tenn.

Engineering Magazine: vols. 20–30. New York, N. Y.

Field Columbian Museum: Geological Series, vols. 1, 2, and 3, no. 1. Chicago, Ill.

Franklin Institute: Journal, vols. 151–160. Philadelphia, Pa.

Geographical Journal: vols. 21–26. London, England.

Geological Magazine: new. ser., decade 4, vols. 8–10; decade 5, vols. 1–2. London, England.

Geological Society of America: Bulletin, vols. 12–16. Rochester, N. Y.

Georgia Geological Survey: Bulletins, nos. 8, 9A, 11, and 12. Atlanta, Ga.

Greene (George K.), Contribution to Indiana Paleontology, pts. 6–20. New Albany, Ind.

Hamilton Scientific Association: Journal and Proceedings, nos. 17–21. Hamilton, Canada.

Harvard College, Museum of Comparative Zoology: Bulletin, vol. 33, no. 7; vol. 36, nos. 7 and 8; vol. 37, no. 3; vol. 38, nos. 2–8; vol. 39, nos. 1–9; vol. 40, nos. 2–7; vol. 41, no. 1; vol. 42, nos. 1–4; vol. 43, nos. 1–3; vol. 44; vol. 45, nos. 1–4; vol. 46, nos. 1–10; vol. 47; vol. 48, no. 1; vol. 49, nos. 1 and 2; Memoirs, vol. 25, no. 2; vol. 26, nos. 4 and 5; vol. 30, nos. 1 and 2; vols. 31 and 32. Cambridge, Mass.

Illinois State Laboratory of Natural History: Bulletin, vol. 5, article 12; vol. 6, articles 1 and 2; vol. 7, articles 1–5. Urbana, Ill.

Indiana Academy of Sciences: Proceedings, 1900–1902. Indianapolis, Ind.

Indiana, Department of Geology and Natural Resources: Annual Report, 25th–29th. Indianapolis, Ind.

Institution of Mining and Metallurgy: Transactions, vol. 10–14. London, England.

Institution of Mining Engineers: Transactions, vol. 18–27, 28 pts. 2–4, 29 pts. 1–4, 30 pts. 1 and 2. Newcastle-upon-Tyne, England.

Iowa Academy of Sciences: Proceedings, vols. 8–12. Des Moines, Iowa.

Iowa Geological Survey: Annual Report, vols. 11–15. Des Moines, Iowa.

Iowa State University, Laboratory of Natural History: Bulletin, vol. 5, nos. 2–4. Iowa City, Iowa.

Johns Hopkins University: Circulars, nos. 149–165; 1904 and 1905; the George Huntington Williams Memorial Lectures, vol. 1. Baltimore, Md.

Journal of Geography: vols. 1–4. Lancaster, Pa.

Journal of Geology: vols. 9–13. Chicago, Ill.

Kansas Academy of Sciences: Transactions, vols. 17–20, pt. 1.

Kansas University Geological Survey: vols. 6 and 7. Topeka, Kans.

Kansas University Quarterly: vol. 9, no. 4; vol. 10, nos. 1–3; Science Bulletin, vols. 1–3, no. 6. Lawrence, Kans.

Kentucky Geological Survey: Bulletins nos. 1, 2, and 5. Lexington, Ky.

Lake Superior Mining Institute: Proceedings, vols. 8–10. Ishpeming, Mich.

Liverpool, Geological Society: Proceedings, vol. 8, pt. 4; vol. 9; vol. 10, pt. 1. Liverpool, England.

London, Geological Society: Quarterly Journal, vols. 57–61. London, England.

London, Geologists' Association: Proceedings, vol. 16, pts. 7–10; vols. 17 and 18; vol. 19, pts. 1–6. London, England.

Louisiana State Experiment Stations: Geology and Agriculture, pts. 1–4 and 6. Baton Rouge, La.

Louisiana Geological Survey: Bulletin, nos. 1 and 3. Baton Rouge, La.

McGill University, Department of Geology: Papers, nos. 15 and 16. Montreal, Canada.

Manchester Geological Society: Transactions, vol. 26, pts. 10–19; vols. 27 and 28; vol. 29, pts. 1, 2, and 4. Manchester, England.

Maryland Geological Survey: Eocene; Miocene; Garrett County; Cecil County; and vols. 4 and 5. Baltimore, Md.

Mazama: vol. 1–2, no. 4. Portland, Oreg.

Mexico, Instituto Geologico, Bulletin, nos. 14–16, 20, 21; Parergones, t. 1, nos. 1–9. Mexico, D. F., Mexico.

Mexico, Secretaria de Fomento: Boletin, 2d época, año 3, 4, 5 nos. 1–5, IV. Mexico, D. F., Mexico.

Michigan Academy of Science: Report, 1st–6th. Lansing, Mich.

Michigan Geological Survey: Reports, 1901–1904; vol. 8, pts. 2, 3; vol. 9, pts. 1, 2. Lansing, Mich.

Michigan Miner: vols. 3–7. Saginaw, Mich.

Mines and Minerals: vol. 21, no. 6–vol. 26, no. 5. Scranton, Pa., and Denver, Colo.

Mining and Scientific Press: vols. 82–91. San Francisco, Cal.

Mining Magazine: vols. 10–12. New York, N. Y.

Minnesota Academy of Natural Sciences: Bulletin, vol. 3, no. 3; vol. 4, no. 1, pts. 1 and 2. Minneapolis, Minn.

Minnesota Geological and Natural History Survey: Final Report, vol. 6. Minneapolis, Minn.

Mississippi Agricultural and Mechanical College: Bulletin, vol. 1, no. 2 (Geological and Industrial Survey of Mississippi: Report 1). Agricultural College, Miss.

Missouri Geological Survey: Preliminary Report (vol. 13); Biennial Reports, 1903 and 1905; 2d ser., vols. 1 and 2. Jefferson City, Mo.

Montana University: Bulletin, nos. 16–31. Missoula, Mont.

National Geographic Magazine: vols. 12–16. Washington, D. C.

Nature: vol. 63, no. 1627–vol. 73, no. 1887. London, England.

Nautilus: vol. 14, no. 9–vol. 18, no. 8. Philadelphia, Pa.

Nebraska Academy of Sciences: Proceedings, vol. 7. Lincoln, Nebr.

Nebraska Geological Survey: vols. 1 and 2, pt. 1. Lincoln, Nebr.

Neues Jahrbuch für Mineralogie, Geologie, und Paleontologie, 1901-1905; Beilage Band, 14-21. Berlin, Germany,

Nevada, University of, Department of Geology and Mining: Bulletin, vol. 1, no. 1. Reno, Nev.

New Brunswick Natural History Society: Bulletin, nos. 18-23. St. John, New Brunswick, Canada.

New Jersey Geological Survey: Annual Reports, 1900-1904; Final Reports, vols. 5 and 6; Report on Paleontology, vol. 3. Trenton, N. J.

New York Academy of Sciences: Annals, vols. 13, 14, 15, and 16, pts. 1 and 2; Memoirs, vol. 2, pts. 3 and 4. New York, N. Y.

New York Botanical Garden: Bulletin, vol. 2 (nos. 6-8); vol. 3 (nos. 9-11); vol .4, (no. 12); Contributions, nos. 1-73. New York, N. Y.

New York State Museum: Annual Reports, 53d-58th, pt. 1; Bulletins, nos. 40-89, 91 93-96, 98; Handbook 19; Memoirs 5-7. Albany, N. Y.

North Carolina Geological Survey: Biennial Reports, 1901-2, 1903-4; Economic Papers, nos. 6-9; Bulletin no. 19; vol. 1. Raleigh, N. C.

North Dakota Geological Survey: Biennial Reports, 1st-3d. Grand Forks, N. Dak.

Nova Scotian Institute of Science: Proceedings and Transactions: vol. 10, pts. 3 and 4, vol. 11, pt. 1. Halifax, Nova Scotia, Canada.

Ohio Geological Survey: Fourth series, Bulletins, nos. 1, 2, 3, and 7. Columbus, Ohio.

Ohio Naturalist: vols. 1-5. Columbus, Ohio.

Ohio State Academy of Science: Annual Reports, 1st-13th; Special Papers, nos. 1-10 (Proceedings, vols. 1-4). Columbus, Ohio.

Oklahoma Geological Survey: Biennial Reports, 1st (Advance Bulletin only), 2d and 3d. Guthrie, Okla.

Ontario Bureau of Mines: Reports, 1901-1905. Toronto, Canada.

Oregon, University of: Bulletin, new ser., vol. 1, nos. 1-4. Eugene, Oreg.

Ottawa Naturalist: vol. 14, no. 10-vol. 19, no. 9. Ottawa, Canada.

Paleontographica: Band 48-52, Lief. 1; supplement, Band 4, Lief. 1. Stuttgart, Germany.

Philadelphia Academy of Natural Sciences: Proceedings, vols. 53-57, pt. 2; Journal, 2d ser., vol. 11, pt. 3-13, pt. 1. Philadelphia, Pa.

Philadelphia, Engineers' Club: Proceedings, vols. 19-22. Philadelphia, Pa.

Plant World: vols. 4-7. Washington, D. C.

Popular Science Monthly: vol. 57, no. 4-vol. 67, no. 8. New York, N. Y.

Portland Society of Natural History: Proceedings, vol. 2, pt. 5. Portland, Me.

Records of the Past: vols. 2-4. Washington, D. C.

Rochester Academy of Science: Proceedings, vol. 4, pp. 65-202. Rochester, N. Y.

St. Louis Academy of Science: Transactions, vols. 11-15, no. 6. St. Louis, Mo.

San Antonio Scientific Society: Bulletin, vol. 1, no. 1. San Antonio, Tex.

San Diego Society of Natural History: vol. 1, no. 1. San Diego, Cal.

School of Mines Quarterly: vols. 22, no. 2-27, no. 1. New York, N. Y.

Science: new ser., vols. 13-22. New York, N. Y.

Scientific American: vols. 84-93. New York, N. Y.

Scientific American Supplement: vols. 51-60. New York, N. Y.

Sierra Club Bulletin: vol. 5, nos. 3 and 4. San Francisco, Cal.

Sioux City Academy of Science and Letters: Proceedings, vol. 1. Sioux City, Iowa.

Smithsonian Institution: Annual Reports, 1899-1904; Contributions to Knowledge, **nos. 1373, 1413, 1438, 1459;** Miscellaneous Collections, 40, 41, 44-49. **Washington, D. C.**

Sociedad Scientifica "Antonio Alzate:" Memorias y Revista, t. 19–22, no. 6. Mexico, D. F., Mexico.

Sociedad Geologica Mexicana: Boletin, t. 1. Mexico, D. F., Mexico.

Società Geologica Italiana: Bulletin, Anno 19–24, fasc. 1. Rome, Italy.

Société Géologique de Belgique: Annals, t. 27–32. Liege, Belgium.

Société Géologique de France: Bulletin, 4^e ser., t. 1–5. Paris, France.

South Dakota Geological Survey: Bulletin, no. 3. Vermilion, S. Dak.

South Dakota School of Mines: Bulletin, nos. 5–7. Rapid City, S. Dak.

Southern California Academy of Sciences: vols. 1–4. Los Angeles, Cal.

Staten Island Natural Science Association: Proceedings, vols. 8 and 9. Staten Island, N. Y.

Stone: vols. 22–27, no. 4. New York, N. Y.

Technology Quarterly: vols. 14–18. Boston, Mass.

Texas Academy of Science: Transactions, vols. 4 and 5. Austin, Tex.

Texas University Mineral Survey: Bulletin, nos. 1–9. Austin, Tex.

Toronto, University of: Studies, Geological Series, nos. 1–3. Toronto, Canada.

Torrey Botanical Club: Bulletin, vols. 28–32. Lancaster, Pa.

Torreya: vols. 1–5. Lancaster, Pa.

United States Department of Agriculture: Field Operations of the Bureau of Soils: Reports, 1st–5th. Washington, D. C.

United States Geological Survey: Annual Reports, 21st–26th; Monographs, 41–48; Professional Papers, nos. 1–43; Bulletins, nos. 177–273, 276; Geologic Atlas of the United States, folios, nos. 60, 70–131, 133, 134; Water-Supply and Irrigation Papers, nos. 41–149, 151, 152; Mineral Resources, 1901–1904. Washington, D. C.

United States National Museum: Annual Reports, 1899–1903; Proceedings, vols. 23–29; Bulletin, nos. 54, 55.

Vermont Geological Survey: Reports of the State Geologist, [1st]—4th (of this series). Burlington, Vt.

Victoria Institute: Journal of Transactions, vols. 35–37. London, England.

Virginia Geological Survey: Geological Series, Bulletin, no. 1. Blacksburg, Va.

Wagner Free Institute of Science: Transactions, vol. 3, pt. 6. Philadelphia, Pa.

Washington Academy of Sciences: Proceedings, vols. 2–7, p. 300. Washington, D. C.

Washington Biological Society: Proceedings, vols. 11–18. Washington, D. C.

Washington Geological Survey: Annual Reports, vols. 1 and 2. Olympia, Wash.

Washington Philosophical Society: Bulletin, vol. 14, pp. 1–336. Washington, D. C.

West Virginia Geological Survey: Geological Map of West Virginia, 2d edition; Bulletin, no. 1; vols. 1(a), 2, 3. Morgantown, W. Va.

Wisconsin Academy of Sciences, Arts, and Letters: Transactions, vols. 13 and 14. Madison, Wis.

Wisconsin Geological and Natural History Survey: Bulletins, nos. 6–14; Biennial Reports of the Commissioners, 1st–4th. Madison, Wis.

Wisconsin Natural History Society: Bulletin, new ser., vols. 1–3. Milwaukee, Wis.

Wisconsin, University of: Science Series, vols. 2 and 3. Madison, Wis.

Wyoming Historical and Geological Society: Proceedings and Collections, vols. 6–8. Wilkes-Barre, Pa.

Wyoming University, School of Mines: The Sweetwater Mining District, 1901; Petroleum Series, Bulletins, nos. 4–7. Laramie, Wyo.

Yorkshire Geological and Polytechnic Society: Proceedings, new ser., vols. 14 and 15. Leeds, England.

Zeitschrift der Deutschen Geologischen Gesellschaft: Band 53–57. Berlin, Germany.

Zeitschrift für Praktische Geologie: Jahrgang 9–13. Berlin, Germany.

BIBLIOGRAPHY.

A.

Abbe (Cleveland, jr.).

1. The physiographic features of Maryland.

   Am. Bur. Geog., Bull., vol. 1, pp. 151-157, 242-248, 342-355, 2 figs., 1900.

2. The physiography of Garrett County [Maryland].

   Md. Geol. Surv., Garrett Co., pp. 27-54, 4 pls., 1902.

   Describes the topographic and drainage features of the county, and discusses its physiographic history.

3. Die Fall-Linie der südöstlichen Vereinigten Staaten.

   Vierteljahrsheften für den geographischen Unterricht (Herausgegeben von Prof. Dr. Heiderich), Wien, Jahrg. 2, pp. 204-210, 2 pls., 1903.

   Describes the position, and discusses the geologic, topographic, geographic, and historic significance of the fall line in the Atlantic coastal plain.

4. Earthquake records from Agana, island of Guam, 1892-1903.

   Terrestrial Magnetism, vol. 9, pp. 81-85, 1904.

Abercrombie (W. R.).

1. The Copper River country, Alaska.

   Franklin Inst., Jour., vol. 158, pp. 353-366, 1904.

   Includes observations on the general geology, and the occurrence of copper and gold ores in Alaska.

Adams (Charles C.).

1. Baseleveling and its faunal significance, with illustrations from southeastern United States.

   Am. Nat., vol. 35, pp. 839-852, 5 figs., 1901; Science, new ser., vol. 13, p. 373, 1901.

   Describes the process of baseleveling and its influence on the distribution of faunas. Includes a bibliography.

2. Post-Glacial origin and migrations of the life of the northeastern United States.

   Jour. Geog., vol. 1, pp. 303-310, 1 fig., and pp. 352-357, 1902.

Adams (Frank Dawson).

1. George M. Dawson.

   Science, new ser., vol. 13, pp. 561-563, 1 pl., 1901.

   Gives an account of his life and work.

2. Experimental work on flow of rocks.

   Abstract: Geol. Soc. Am., Bull., vol. 12, pp. 455-461, 2 pls., 1901; Science, new ser., vol. 13, pp. 95-96, 1901.

3. In memoriam—Sir John William Dawson.

   Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 7, sect. 4, pp. 3-14, 1901.

   Gives an account of his life and work.

4. [In discussion of "The origin of ore-deposits."]

   Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 966-967, 1902.

5. Haliburton and Bancroft areas, Ontario.

   Can. Geol. Surv., Summ. Rept. for 1901, pp. 145-148, 1902.

   Describes the author's field work in this region.

Adams (Frank Dawson)—Continued.

6. Memoir of George M. Dawson.

   Geol. Soc. Am., Bull., vol. 13, pp. 497-509, 1903.
   Includes a list of publications compiled by H. M. Ami.

7. The Monteregian Hills—a Canadian petrographical province.

   Jour. Geol., vol. 11, pp. 239-282, 7 figs., 1903; McGill Univ., Dept. Geol., Papers, no. 14, 1903; Can. Rec. Sci., vol. 9, pp. 198-245, 7 figs., 1905.
   Describes the geographic extent, character, structure, and origin of the elevations in the Province of Quebec for which the term Monteregian Hills is proposed, and the occurrence, characters, chemical composition, and classification of the rocks composing Mount Johnson.

8. On a new nepheline rock from the Province of Ontario, Canada.

   Am. Jour. Sci., 4th ser., vol. 17, pp. 269-276, 1904.
   Describes the occurrence, characters, and composition.

9. Geophysical investigations suggested.

   Carnegie Inst. of Wash., Yearb. no. 2, 1903, pp. 195-201, 1904.
   Sets forth lines of investigations of igneous and metamorphic rocks.

10. The artesian and other deep wells on the island of Montreal.

    Can. Mg. Inst., Jour., vol. 8, pp. 76-101, 5 figs., 1905.

11. Investigation on flow of rocks.

    Abstract: Carnegie Inst. of Wash., Yearb. no. 3, 1904, pp. 119-120, 1905.

Adams (Frank Dawson) and **LeRoy** (Osmond E.).

1. The artesian and other deep wells on the Island of Montreal.

   Can. Geol. Surv., Ann. Rept., vol. 14, pt. o, 74 pp., 6 figs., 3 maps, 1904.
   Includes an account of the geology of the region around Montreal, Canada.

Adams (Frank Dawson) and **Nicholson** (John Thomas).

1. An experimental investigation into the flow of marble.

   London Roy. Soc., Phil. Trans., ser. A, vol. 195, pp. 363-401, 4 pls., 1901. Abstract: Am. Geol., vol. 27, p. 316, 1901.

2. An experimental investigation into the flow of marble.

   Can. Rec. Sci., vol. 8, pp. 426-436, 1902.
   Gives a summary of the authors' investigations.

Adams (Frank Dawson), **Ami** (H. M.) and.

1. Synoptical table of geological formations about Montreal, Canada.

   See **Ami** (H. M.) and **Adams** (F. D.), 1.

Adams (George Irving).

1. The Carboniferous and Permian age of the Red Beds of eastern Oklahoma from stratigraphic evidence.

   Am. Jour. Sci., 4th ser., vol. 12, pp. 383-386, 1 fig., 1901.
   Describes the extension of these beds from Kansas into Oklahoma and discusses the evidence as to their age.

2. Oil and gas fields of the western interior and northern Texas Coal Measures, and of the Upper Cretaceous and Tertiary of the Western Gulf Coast.

   U. S. Geol. Surv. Bull. no. 184, pp. 1-64, 2 pls., 4 figs., 1901.
   Describes the general geology of the oil and gas fields of Kansas and Indian Territory, and the developments of the various localities. Describes the stratigraphy of the Texas oil fields and their developments.

3. Physiography and geology of the Ozark region.

   U. S. Geol. Surv., 22d Ann. Rept., pt. 2, pp. 69-94, 3 pls., 3 figs., 1901.
   Describes physiographic features, and character and occurrence of igneous rocks and pre-Cambrian, Cambrian, Ordovician, Silurian, Devonian, and Carboniferous strata, and the geologic structure of the region.

4. Geology and water resources of the Patrick and Goshen Hole quadrangles in eastern Wyoming and western Nebraska.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 70, 50 pp., 11 pls., 4 figs., 1902.
   Describes geologic structure and physiographic features.

Adams (George Irving)—Continued.

5. Physiographic divisions of Kansas.
Am. Geog. Soc., Bull., vol. 34, pp. 89–104, 2 figs., 1902.
Describes the characteristics of the several physiographic divisions of the region.

6. Stratigraphic relations of the Red Beds to the Carboniferous and Permian in northern Texas.
Abstract: Science, new ser., vol. 16, p. 1029, 1902.

7. Lithologic phases of the Pensylvanian and Permian of Kansas, Indian Territory, and Oklahoma.
Abstract: Science, new ser., vol. 15, pp. 545–546, 1902.

8. Note on a Tertiary terrane new in Kansas geology.
Am. Geol., vol. 29, pp. 301–303, 1 fig., 1902.
Describes the occurrence and character of the beds.

9. Physiographic divisions of Kansas.
Kans. Acad. Sci., Trans., vol. 18, pp. 109–123, 4 figs., 1903.
Defines the divisions and describes their topographic and geologic features.

10. Principles controlling the geologic deposition of the hydrocarbons.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 340–347, 1903.

11. Stratigraphic relations of the Red Beds to the Carboniferous and Permian in northern Texas.
Geol. Soc. Am., Bull., vol. 14, pp. 191–200, 3 figs., 1903.
Describes occurrence, stratigraphy, and lithologic characters of the Red Beds of Texas, Oklahoma, Indian Territory, and Kansas, and discusses their relationships.

12. Zinc and lead deposits of northern Arkansas.
U. S. Geol. Surv., Bull. no. 213, pp. 187–196, 1903. Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 163–174, 1904.
Gives a brief account of the position, history of development, and geologic structure of the field, and describes the occurrence, character, and source of the ores.

13. Origin of bedded breccias in northern Arkansas.
Abstract: Science, new ser., vol. 17, pp. 792–793, 1903.

14. Geology, technology, and statistics of gypsum.
U. S. Geol. Surv., Bull. no. 223, pp. 12–32, 6 pls., 1 fig., 1904.
Includes a short discussion of the origin and geologic age of gypsum deposits in general.

15. Zinc and lead deposits of northern Arkansas.
U. S. Geol. Surv., Professional Paper no. 24, pp. 1–89, 27 pls., 6 figs., 1904.
Describes physiographic features briefly, the occurrence and character of Ordovician, Devonian, and Carboniferous formations, the geological history and structure, and the occurrence and origin of the zinc and lead ore deposits of this region.

16. The Rabbit Hole sulphur mines near Humboldt House, Nev.
U. S. Geol. Surv., Bull. no. 225, pp. 497–500, 1904.
General geology and occurrence and origin of the sulphur.

17. Summary of the water supply of the Ozark region in northern Arkansas.
U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 179–182, 2 figs., 1905.

Adams (George Irving) and **Ulrich** (E. O.).

1. Fayetteville folio, Arkansas-Missouri.
U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 119, 1905.
Describes the physiography, the occurrence, character, and relations of Ordovician, Devonian, and Carboniferous sedimentary strata, the history of the physical changes, and the economic resources.

Adams (George Irving), **Girty** (George H.), and **White** (David).

1. Stratigraphy and paleontology of the upper Carboniferous rocks of the Kansas section.
U. S. Geol. Surv., Bull. no. 211, 123 pp., 4 pls., 10 figs., 1903.
Comprises a review of previous work upon the stratigraphy, and a description in detail of the geologic formations, including definition and synonymy, character and extent, and faunal lists of the upper Carboniferous strata of Kansas and northern Indian Territory, by George I. Adams; a discussion and tabulation of the invertebrate fossils, by George H. Girty, and an annotated list of the fossil plants, by David White.

Adams (George Irving), **Haworth** (Erasmus), and **Crane** (W. R.).

1. Economic geology of the Iola quadrangle, Kansas.

U. S. Geol. Surv., Bull. no. 238, 83 pp., 11 pls. and 13 figs., 1904.
Describes the general character and areal geology of the area, the character, occurrence, and relations of the Carboniferous formations, the geologic structure of the field, and in detail the occurrence, character, and origin of the natural gas and petroleum, and their utilization in the manufacture of cement, brick, and zinc spelter.

Adams (Thomas K.).

1. Lower productive Coal Measures of the bituminous regions of Pennsylvania; the importance of a knowledge of their characteristic features.

Mines & Minerals, vol. 23, pp. 348-352, 3 figs., 1903.
Describes the geology of the Coal Measures of the bituminous coal regions of Pennsylvania.

Aguilar y Santillán (Rafael).

1. Bibliography of Mexican geology and mining.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 605-680, 1902.

Aguilera (José G.).

1. Distribución geográfica y geológica de los criaderos minerales de la República Mexicana.

Acad. de Ciencias exactas, fisicas, y naturales, México, 57 pp., 1901.
Describes the occurrence of various mineral products in Mexico.

2. Sobre las condiciones tectónicas de la República Mexicana.

México, Oficina Tip. de la Secretaria de Fomento, 34 pp., 1901.
Gives a general account of the geologic structure of Mexico.

3. The geographical and geological distribution of the mineral deposits of Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 497-520, 1902.
Describes the occurrence of mineral deposits.

4. [The great Bacubirito meteorite of Mexico.]

Am. Geol., vol. 33, p. 267, 1904.
Gives data in regard to the Bacubirito meteorite.

5. Reseña del desarrollo de la geología en México.

Soc. Geol. Mex., Bol., t. 1, pp. 35-117, 1905.
Reviews in chronologic order the investigations upon the geology of Mexico.

Aiken (P. B.).

1. The mines of Santa Eulalia, Mexico.

Mg. & Sci. Press, vol. 87, p. 402, 1 fig., 1903.
Describes briefly the general geology and the occurrence of the silver-lead ores.

Alcala (Maximino).

1. Criaderos de petroleo de Pichucalco, Estado de Chiapas [México].

Soc. Cient. Antonio Alzate, Mem. y Rev., t. 13, pp. 327-335, 2 pls., 1903.
Describes the occurrence, geologic relations, and character of petroleum from this locality.

Alden (William C.).

1. Chicago folio, Illinois-Indiana.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 81, 1902.
Describes geographic and topographic features, the general geologic relations, the occurrence and character of strata of Cambrian, Silurian, Devonian, and Quaternary age, and the economic resources, chiefly building stones.

2. The stone industry in the vicinity of Chicago, Ill.

U. S. Geol. Surv., Bull. no. 213, pp. 357-360, 1903.
Describes the occurrence and utilization of limestone, sand, and gravel in the vicinity of Chicago, Ill.

3. The Delavan lobe of the Lake Michigan glacier of the Wisconsin stage of glaciation and associated phenomena.

U. S. Geol. Surv., Professional Paper no. 34, 106 pp., 15 pls., 1904.
Describes the character, occurrence, and relations of various glacial deposits and associated phenomena, and the physiographic changes and succession of events during the period of glaciation in the area investigated.

Alden (William C)—Continued.

4. The drumlins of southeastern Wisconsin.

U. S. Geol. Surv., Bull. no. 273, 46 pp., 9 pls., and 8 figs., 1905.

Describes the distribution, arrangement, relations to morainal and other glacial features, form, structure, composition, and origin of the drumlins in southeastern Wisconsin.

Alden (William C.), **Fuller** (Myron L.) and.

1. Gaines folio, Pennsylvania-New York.

See **Fuller** (M. L.) and **Alden** (W. C.), 1.

2. Elkland-Tioga folio, Pennsylvania.

See **Fuller** (M. L.) and **Alden** (W. C.), 2.

Alderson (Matt W.).

1. Genesis of ore deposits.

Mg. & Sci. Press, vol. 83, pp. 4-5, 14, 24, 2 figs., 1901.

Aldrich (Truman H.).

1. A Texas oil well fossil.

Nautilus, vol. 15, p. 74, 2 figs., 1901.

2. New species of Tertiary fossils from Alabama, Mississippi, and Florida.

Nautilus, vol. 16, pp. 97-101, 2 pls., 1903.

3. A new Conus from the Tertiary of Florida.

Nautilus, vol. 16, pp. 131-132, 2 figs., 1903.

4. Two new species of Eocene fossils from the Lignitic of Alabama.

Nautilus, vol. 17, pp. 19-20, 2 figs., 1903.

5. A new oyster from the Eocene of Alabama.

Nautilus, vol. 18, p. 61, 1 pl., 1904.

Aldrich (Truman H.), **Smith** (Eugene A.) and.

1. The Grand Gulf formation.

See **Smith** (E. A.) and **Aldrich** (T. H.), 1.

Allen (E. T.), **Day** (A. L.) and.

1. The isomorphism and thermal properties of the feldspars.

See **Day** (A. L.) and **Allen** (E. T.), 1.

2. The isomorphism and thermal properties of the feldspars. Part I. Thermal studies.

See **Day** (A. L.) and **Allen** (E. T.), 2.

Allen (J. A.).

1. A fossil porcupine from Arizona.

Am. Mus. Nat. Hist., Bull., vol. 20, pp. 383-384, 1904.

Allen (O. B.) and **Comstock** (W. J.).

1. Bastnasite and tysonite from Colorado.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 126-129, 1901. (From Am. Jour. Sci., vol. 19, pp. 390-393, 1880.)

Althouse (H. W.).

1. The Norton coals of the Big Sandy basin.

Eng. & Mg. Jour., vol. 77, pp. 235-236, 2 figs., 1904.

Describes the location, topography, and general geology of the field, and the character, occurrence, and geologic relations of the coal seams.

Ami (Henry M.)

1. On the geology of the principal cities in eastern Canada.

Can. Roy. Soc., Proc. and Trans., 2d ser., vol. 6, sect. 4, pp. 125-174, 1900.

Describes the local geology in the vicinity of several cities.

2. Synopsis of the geology of Canada. (Being a summary of the principal terms employed in Canadian geological nomenclature.)

Can. Roy. Soc., Proc. and Trans., new ser., vol. 6, sect. 4, pp. 187-225, 1900.

Ami (Henry M.)—Continued.

3. Paleontology and stratigraphy.

Can. Geol. Surv., Summ. Rept. for 1900, pp. 178-182, 1901.

4. On a new or hitherto unrecognized geological formation in the Devonian system of Canada.

Can. Rec. Sci., vol. 8, pp. 296-305, 1901.
Describes the lithologic and faunal characters of the Knoydart formation in Nova Scotia.

5. Addenda and corrigendum to "Progress of geological work in Canada during 1899."

Can. Rec. Sci., vol. 8, pp. 329-331, 1901.

6. The late George Mercer Dawson.

Ottawa Nat., vol. 15, pp. 43-52, 1901.
Gives a sketch of his life and work.

7. Bibliography of Dr. George Mercer Dawson.

Ottawa Nat., vol. 15, pp. 202-213, 1901.

8. Knoydart formation of Nova Scotia.

Geol. Soc. Am., Bull., vol. 12, pp. 301-312, 1 pl., 1 fig., 1901.
Describes the lithologic and faunal characters of a Devonian formation.

9. The Knoydart formation in Nova Scotia—a bit of the old Red sandstone of Europe.

Abstract: Science, new ser., vol. 13, p. 135, 1901.

10. Stratigraphical note.

Science, new ser., vol. 13, pp. 394-395, 1901.
Contains brief notes on Devonian and Silurian subdivisions in Nova Scotia.

11. The Royal Society of Canada (twentieth meeting).

Science, new ser., vol. 13, pp. 1015-1021, 1901.
Contains abstracts of papers read.

12. Notes on some of the Silurian and Devonian formations of eastern Canada, and their faunas and floras.

Abstract: Science, new ser., vol. 13, pp. 1017-1018, 1901.

13. On the subdivisions of the Cambrian system in Canada.

Abstract: Science, new ser., vol. 13, p. 1019, 1901.

14. A dual classification required in the nomenclature of the geological formations in different systems in Canada.

Abstract: Science, new ser., vol. 13, pp. 1019-1020, 1901.

15. Brief biographical sketch of Elkanah Billings.

Am. Geol., vol. 27, pp. 265-281, 1901.
Gives a brief account of the life and work of Billings and a chronologic list of his publications.

16. Bibliography of Dr. George M. Dawson.

Am. Geol., vol. 28, pp. 76-86, 1901.

17. Bibliography of E. Billings.

Am. Geol., vol. 28, p. 132, 1901.
Gives five additional references to the bibliography of Billings heretofore published.

18. Bibliography of Sir John William Dawson.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 7, sect. 4, pp. 15-44, 1901.

19. Bibliography of Canadian geology and paleontology for the year 1900.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 7, sect. 4, pp. 123-133, 1901.

20. Preliminary lists of the organic remains occurring in the various geological formations comprised in the map of the Ottawa district, including formations in the provinces of Quebec and Ontario, along the Ottawa River.

Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 49G-77G, 1902.

Ami (Henry M.)—Continued.

21. Lists of fossils obtained from the several formations along the Ottawa River pertaining to the report on Sheet no. 121, Quebec and Ontario (Grenville Sheet).
    Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 139J-143J, 1902.
22. Artesian wells, paleontology, archæology, bibliographies, etc.
    Can. Geol. Surv., Summ. Rept. for 1901, pp. 258-265, 1902.
    A report upon the work done by the author.
23. Field notes on the geology of the country about Chelsea, Quebec.
    Ottawa Nat., vol. 16, pp, 149-151, 1902.
    Contains notes on local geology.
24. Brief description of the map of the "Ottawa district."
    Ottawa Nat., vol. 16, pp. 187-189, 1902.
25. Annual report of the geological section of the Ottawa Field-Naturalists' Club, for the year 1901-1902.
    Ottawa Nat., vol. 15, pp. 254-262, 1902.
    Contains notes on the geology of the vicinity of Ottawa and a list of fossils from the Utica at Ottawa, Ontario.
26. Notes on the Albany meeting of the Geological Society of America held December, 1900.
    Can. Rec. Sci., vol. 8, pp. 471-477, 1902.
27. Bibliography of Dr. George M. Dawson.
    Can. Rec. Sci., vol. 8, pp. 503-516, 1902.
28. Description of tracks from the fine-grained siliceous mudstones of the Knoydart formation (Eo-Devonian) of Antigonish County, Nova Scotia.
    N. S. Inst. Sci., Trans., vol. 10, pp. 330-332, 1 pl., 1902.
29. On the possible occurrence of a coal area beneath the Neo-Carboniferous or Permian strata of Pictou County, Nova Scotia.
    Can. Mg. Rev., vol. 21, pp. 160-162, 3 figs., 1902.
    Describes the geologic structure of this area.
30. The Union and Riversdale formations in Nova Scotia.
    Science, new ser., vol. 15, p. 392, 1902.
    Gives abstract of a paper read before the Geological Society of America with the title "The Meso-Carboniferous age of the Union and Riversdale formations in Nova Scotia."
31. On the possible occurrence of a coal area beneath the Neo-Carboniferous or Permian strata of Pictou County, Nova Scotia.
    Can. Mg. Inst., Jour., vol. 5, pp. 358-364, 3 figs., 1902.
    Describes the geologic structure of this area.
32. The Cambrian age of the Dictyonema slates of New Canaan and Kentville, Nova Scotia.
    Geol. Mag., dec. iv, vol. 9, pp. 218-220, 1902.
33. Esquisse géologique du Canada ou matériaux pour servir à la préparation d'un chronographe géologique pour le Canada.
    Quebec, 61 pp., 1902. (Extracted from Naturaliste canadien, vol. 28, pp. 194-202; vol. 29, pp. 3-14, 19-30, 35-46, 52-61, 73-80, 1902.)
    Gives a general résumé of the geology of Canada, describing the geographic distribution of the formations of Paleozoic, Mesozoic, Tertiary, and Quaternary age.
34. Bibliography of Canadian geology and paleontology for the year 1901.
    Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 169-182, 1902.
35. Bibliography of Dr. George M. Dawson.
    Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 192-201, 1902.
36. Paleontology and chronological geology.
    Can. Geol. Surv., Summ. Rept. for 1902, pp. 317-335, 1903.
    Gives a statement of the paleontological work of the year, discusses records of borings, and gives notes upon the geology of Victoria Cove, Quebec.

Ami (Henry M.)—Continued.

37. On the Upper Cambrian age of the Dictyonema slates of Angus Brook, New Canaan and Kentville, N. S. [Canada].

    Nova Scotian Inst. Sci., Proc. & Trans., vol. 10, pp. 447–450, 1903.

38. Sketch of the life and work of the late Dr. A. R. C. Selwyn, C. M. G., LL. D., F. R. S., F. G. S., etc., Director of the Geological Survey of Canada from 1869 to 1894.

    Am. Geol., vol. 31, pp. 1–21, 1 pl. (por.), 1903.

39. Ordovician succession in eastern Ontario.

    Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 517–518, 1903.
    Presents a list of the formations and gives their lithologic characters.

40. Meso-Carboniferous age of the Union and Riversdale formations, Nova Scotia.

    Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 533–535, 1903.
    Contains additional data on the age and relations of these formations.

41. The first Eparchæan formation.

    Abstract: Science, new ser., vol. 17, p. 290, 1903.

42. Bibliography of Canadian geology and paleontology for the year 1902.

    Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 9, sect. 4, pp. 173–188, 1903.

43. Memorial or sketch of the life of the late Dr. A. R. C. Selwyn, Director of the Geological Survey of Canada from 1869 to 1894.

    Can. Roy. Soc., Trans., 2d ser., vol. 10, sect. 4, pp. 173–205, 1 pl. (por.), 1905.
    Includes a list of his published writings.

44. Bibliography of Canadian geology and paleontology for the year 1903.

    Can. Roy. Soc., Trans., 2d ser., vol. 10, sect. 4, pp. 207–219, 1905.

45. The late Dr. A. R. C. Selwyn, C. M. G. His work in Canada.

    Can. Mg. Rev., vol. 24, pp. 175–176, 1905.
    Gives an outline of Selwyn's work in Canada as director of the geological survey.

46. Preliminary list of the fossils collected by Prof. L. W. Bailey from various localities in the province of New Brunswick during 1904.

    Can. Geol. Surv., Summ. Rept. for 1904, pp. 289–292, 1905.

47. Notes on a collection of organic remains from the ferruginous and friable shales of Messenger Brook, Torbrook, near county line, Nova Scotia.

    Can. Geol. Surv., Summ. Rept. for 1904, pp. 385–387, 1905.

48. Description of a species of Bythotrephis from the shales along the Unihani River, Yukon district, Canada.

    Can. Geol Surv., Summ. Rept. for 1904, p. 388, 1905.

49. Preliminary lists of fossil organic remains from the Potsdam, Beekmantown (Calciferous), Chazy, Black River, Trenton, Utica, and Pleistocene formations comprised within the Perth Sheet (no. 119) in eastern Ontario.

    Can. Geol. Surv., Ann. Rept., vol. 14, pt. J, pp. 80–89, 1904.

Ami (Henry M.) and **Adams** (Frank D.).

1. Synoptical table of geological formations about Montreal, Canada.

    Can. Geol. Surv., Ann. Rept., vol. 14, pt. 0, pp. 26–29, 1904.

Ami (Henry M.), **Penhallow** (D. P.) and.

1. Determinations of fossil plants from various localities in British Columbia and the Northwest territories, with notes on the geological horizons indicated.

    See **Penhallow** (D. P.) and **Ami** (H. M.), 1.

Anderson (Frank M.).

1. The Neocene basins of the Klamath Mountains [California].

    Abstract: Jour. Geol., vol. 9, pp. 75–76, 1901; Geol. Soc. Am., Bull., vol. 12, pp. 500–501, 1901
    Brief notes on the structural features of the range.

Anderson (Frank M.)—Continued.

2. The physiographic features of the Klamath Mountains.

Jour. Geol., vol. 10, pp. 144–159, 1902.

Describes the physiographic features, the general character of the Cretaceous and Tertiary sediments and of the volcanic rocks, and the development of the present drainage.

3. Cretaceous deposits of the Pacific coast.

Cal. Acad. Sci., Proc., 3d ser., Geol., vol. 2, pp. 1–154, 12 pls., 1902.

Discusses the occurrence, characters, correlation, and faunas of the Cretaceous deposits of the Pacific coast region, and describes a large number of species—many of them new.

4. Ore deposits of Shasta County [California].

Abstract: Science, new ser., vol. 15, p. 412, 1902.

5. Physiography and geology of the Siskiyou Range.

Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Jour. Geol., vol. 11, p. 100, 1903.

6. Stratigraphy of the southern Coast ranges of California.

Abstract: Geol. Soc. Am., Bull., vol. 15, pp. 581–582, 1904.

7. A stratigraphic study in the Mount Diablo Range of California.

Cal. Acad. Sci., Proc., 3d ser., Geol., vol. 2, pp. 155–248, 23 pls., 1905.

Describes the character, occurrence, fossil content, and relations of Cretaceous and Tertiary strata, and gives systematic descriptions of new species of fossils.

Anderson (Netta C.).

1. A preliminary list of fossil mastodon and mammoth remains [in Illinois and Iowa].

Augustana Library Publications, no. 5, pp. 3–43, 2 pls., 1905.

Anderson (Tempest).

1. Characteristics of recent volcanic eruptions.

Nature, vol. 67, p. 308, 1903.

Describes phenomena exhibited in the eruptions of Soufrière and Mont Pelé.

2. Recent volcanic eruptions in the West Indies.

Geog. Jour., vol. 31, pp. 265–279, 13 pls., 1903; Yorkshire Phil. Soc., Ann. Rept. for 1903.

Describes volcanic phenomena and physiographic changes produced by the eruptions of 1902 in St. Vincent and Martinique.

Anderson (Tempest) and **Flett** (John S.).

1. Preliminary report on the recent eruption of the Soufrière in St. Vincent, and of a visit to Mont Pelée, in Martinique.

London Roy. Soc., Proc., vol. 70, pp. 423–445, 3 pls., 1902; Nature, vol. 66, pp. 402–406, 1902; Smith. Inst., Ann. Rept. for 1902, pp. 309–330, 3 pls., 1903.

Describes physical features of St. Vincent in the vicinity of Soufrière, the eruptions of May and July, 1902, of Soufrière and Mont Pelé, their effects and the character of the ejected materials.

2. Report on the eruptions of the Soufrière, in St. Vincent, in 1902, and on a visit to Montagne Pelée, in Martinique. Part I.

London Roy. Soc., Phil. Trans., ser. A, vol. 200, pp. 353–553, 19 pls., 1903.

Describes physiographic features and general geology of St. Vincent, the phenomena of the eruptions of the Soufrière of May, 1902, and geologic and physiographic changes resulting, and discusses and compares the eruption phenomena of the Soufrière and Montagne Pelée.

Andrews (C. L.).

1. Muir glacier [Alaska].

Nat. Geog. Mag., vol. 14, pp. 441–445, illus., 1903.

Describes the appearance of the glacier in 1903. An appended note by G. K. Gilbert gives data in regard to the glacier.

Angermann (Ernesto).

1. Informe acerca de la fisiografía, geología e hidrología de los alrededores de La Paz, Baja California.

México, Bol. de la Secretaría de Fomento, 2a. ép., año 3, IV, pp. 216–283, 1904; México, Inst. Geol., Par., t. 1, pp. 31–49, 2 pls., 1904.

Gives physiographic, geologic, and hydrologic observations upon the environs of La Paz in Lower California.

Angermann (Ernesto)—Continued.

2. Apuntes sobre el Paleozoico en Sonora [México].

México, Inst. Geol., Par., t. 1, pp. 81-90, 1 pl., 1 fig., 1904.

Gives observations upon the occurrence and character of the geologic formations of Sonora, particularly upon Paleozoic deposits.

3. El fierro meteórico de Bacubirito (Est. de Sinaloa).

México, Inst. Geol., Par., t. 1, pp. 113-116, 1 pl., 1904.

Observations upon size and occurrence of the meteorite of Bacubirito, Mexico.

4. Observaciones geologicas en una ascencion al Citlaltapetl (Pico de Orizaba) [Mexico].

Soc. Cient. "Antonio Alzate," Mem. y Rev., t. 21, pp. 365-369, 1 pl., 1904.

Gives observations upon the physiographic features and geology of the volcano Orizaba.

Argall (P. H.).

1. Pelée's obelisk.

Eng. & Mg. Jour., vol. 76, p. 420, 1903.

Discusses the formation of the obelisk in the crater of Mont Pelé.

Argall (Philip).

1. Notes on the Santa Eulalia mining district, Chihuahua, Mexico.

Colo. Sci. Soc., Proc., vol. 7, pp. 117-126, 4 figs., 1903.

Gives observations on the geology and the occurrence and character of the ore deposits.

2. The Santa Eulalia [Mexico] ore deposits.

Eng. & Mg. Jour., vol. 76, pp. 350-351, illus., 1903.

Describes the general geology, the igneous intrusions, the occurrence and character of the silver-lead ores, and discusses their origin.

Armstrong (L. K.).

1. The Alberta [Canada] coal field.

Mg. Rep., vol. 50, pp. 548-550, 3 figs., 1904.

Gives notes upon the general geology of the region, and describes the occurrence and character of the coal beds, and the character of the coals.

Arnold (Delos) and (Ralph).

1. The marine Pliocene and Pleistocene stratigraphy of the coast of southern California.

Jour. Geol., vol. 10, pp. 117-138, 5 pls., 7 figs., 1902.

Describes the lithologic and faunal character of the strata and the Tertiary and Pleistocene history of the region. Discusses the relation of the Merced series with these beds.

Arnold (Ralph).

1. Bibliography of the literature referring to the geology of Washington.

Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 323-338, 1902.

2. The paleontology and stratigraphy of the marine Pliocene and Pleistocene of San Pedro, California.

Cal. Acad. Sci., Mem., vol. 3, pp. 1-420, 37 pls., 1903; Leland Stanford jr. Univ., Cont. to Biol. from the Hopkins Seaside Laboratory, 31, pp. 1-420, 37 pls., 1903.

Describes the topography and the character and occurrence of Tertiary and Quaternary formations of California bordering the Pacific, and gives lists of fossils by formations showing geographical distribution and relations to existing faunas, and systematic descriptions of the genera and species. Includes descriptions of several new species of corals by T. Wayland Vaughan and of mollusks by W. H. Dall and Paul Bartsch.

3. Faunal relations of the Carrizo Creek beds of California.

Abstract: Science, new ser., vol. 19, p. 503, 1904.

4. Gold placers of the coast of Washington.

U. S. Geol. Surv., Bull. no. 260, pp. 154-157, 1 fig., 1905.

5. Coal in Clallam County, Wash.

U. S. Geol. Surv., Bull. no. 260, pp. 413-421, 1905.

Describes the geography and general geology of the region, and the occurrence and character of the coal.

Arnold (Ralph)—Continued.

6. Some crystalline rocks of the San Gabriel Mountains, near Pasadena, California.

Abstract: Science, new ser., vol. 21, p. 350, 1905.

Arnold (Ralph) and **Strong** (A. M.).

1. Some crystalline rocks of the San Gabriel Mountains, California.

Geol. Soc. Am., Bull., vol. 16, pp. 183–204, 2 figs., 1905.

Describes the location, typography, and age of the San Gabriel Mountains, the general character of the rocks, and in detail the occurrence, megascopic characters, and constitution of plutonic and metamorphic rocks.

Arnold (Ralph), **Haehl** (H. L.) and.

1. The Miocene diabase of the Santa Cruz Mountains in San Mateo County, California.

See **Haehl** (H. L.) and **Arnold** (Ralph), 1.

Arreola (José Maria).

1. The recent eruptions of Colima [Mexico].

Jour. Geol., vol. 11, pp. 749–761, 8 figs., 1903.

Gives a chronologic record of the activity of the volcano Colima and discusses volcanic phenomena.

Ashley (George Hall).

1. The eastern interior coal field.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 265–305, 4 pls., 1 fig., 1902.

Describes extent, general geologic relations, stratigraphy and structure of the coal field occupying parts of Illinois, Indiana, and Kentucky, and the character and occurrence of the coal and coal seams.

2. The geology of the Lower Carboniferous area of southern Indiana.

Ind., Dept. Geol. & Nat. Res., 27th Ann. Rept., pp. 49–122, 13 pls., 3 figs., 1903.

Describes physiographic and drainage features, the stratigraphy, character, occurrence, and geologic relations of Lower Carboniferous formations and economic resources of this area.

3. The Cumberland Gap coal field of Kentucky and Tennessee.

U. S. Geol. Surv., Bull. no. 225, pp. 259–275, 1904.

Describes location, stratigraphy, and geologic structure of the field, the character and geologic relations of the coal seams, and the mining developments.

4. The Cumberland Gap coal field.

Mg. Mag., vol. 10, pp. 94–100, 1 pl., 5 figs., 1904.

Describes the location and general geologic structnre of the coal basin occupying parts of Kentucky and Tennessee, and the occurrence, character, and mining of the coals.

5. [Geologic structure of the region around Middlesboro, Ky.]

Abstract: Science, new ser., vol. 19. p. 856, 1904.

6. Water resources of the Middlesboro-Harlan region of southeastern Kentucky.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 177–178, 1905.

7. Coal in the Nicholas quadrangle, West Virginia.

U. S. Geol. Surv., Bull. no. 260, pp. 422–428, 1905.

Describes the general geology, and the character and occurrence of the coals.

8. Water resources of the Nicholas quadrangle, West Virginia.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 64–66, 1905.

Ashley (George Hall), **Blatchley** (W. S.) and.

1. The lakes of northern Indiana and their associated marl deposits.

See **Blatchley** (W. S.) and **Ashley** (G. H.), 1.

Ashley (George Hall), **Fuller** (Myron L.) and.

1. Recent work in the coal field of Indiana and Illinois.

See **Fuller** (M. L.) and **Ashley** (G. H.), 1.

Askwith (W. R.).

1. The West Gore antimony deposits [Nova Scotia].

Can. Mg. Rev., vol. 20, pp. 173–175, 2 figs., 1901.

Describes the character and occurrence of the ore body.

Atkin (Austin J. R.).

1. The genesis of the gold deposits of Baskerville (British Columbia) and the vicinity.

   London Geol. Soc., Quar. Jour., vol. 60, pp. 389-393, 1904.

2. Some notes on the gold occurrences on Lightning Creek, British Columbia.

   Geol. Mag., new ser., dec. 5, vol. 2, pp. 104-106, 2 figs., 1905.

3. An occurrence of scheelite near Baskerville, British Columbia.

   Geol. Mag., new ser., dec. 5, vol. 2, pp. 116-117, 1905.

Atwood (Wallace W.).

1. Glaciation of San Francisco Mountain, Arizona.

   Jour. Geol., vol. 13, pp. 276-279, 1 fig., 1905.

Austin (W. L.).

1. Some tellurium veins in La Plata Mountains [Colorado].

   Colo. Sci. Soc., Proc., vol. 6, pp. 87-90 [1902].
   Describes the occurrence and character of the veins, and the character of the country rock.

2. Some New Mexico copper deposits.

   Colo. Sci. Soc., Proc., vol. 6, pp. 91-95 [1902].
   Describes the occurrence and discusses the origin of the ore deposits.

3. The ore deposits of Cananea [Mexico].

   Eng. & Mg. Jour., vol. 76, pp. 310-311, 2 figs., 1903.
   Describes the character and occurrence of the copper ore deposits.

4. [In discussion of paper by Walter Harvey Weed, "Ore deposits near igneous contacts."]

   Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1070-1077, 1903.
   Describes occurrences of some ore deposits and their bearing upon the paper discussed.

5. [In discussion of paper by Waldemar Lindgren, "The geological features of the gold production of North America."]

   Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1079-1081, 1903.
   Calls attention to the occurrence of a gold deposit of supposed Cambrian age in Colorado.

B.

Babcock (E. J.).

1. Report of the Geological Survey of North Dakota.

   N. Dak. Geol. Surv., 1st Bien. Rept., 103 pp., 1901.
   Describes the physiographic and geologic features and the character and occurrence of clay, coal, and water supply of the State.

2. Water resources of the Devils Lake region [North Dakota].

   N. Dak. Geol. Surv., 2d Bien. Rept., pp. 208-250, 2 pls., 8 figs., 1902.
   Describes topography, geologic structure, and water supply of this region

Babcock (E. N.) and **Minor** (Jessie).

1. The Graydon sandstone and its mineral waters.

   Drury Coll., Bradley Field Geol. Station, Bull., vol. 1, pp. 22-31, 1904.
   Describes the character and occurrence of the sandstone and discusses its origin and bearing upon the geologic history of the region. Describes mineral waters coming from the sandstone.

Bache (Franklin).

1. The Arkansas-Indian Territory coal field.

   Eng. & Mg. Jour., vol. 76, pp. 390-392, illus., 1903.
   Describes the location and extent of the field, the character and occurrence of the coal seams, and the mining developments.

Bacorn (H. C.).

1. A complicated fault system.

   Eng. & Mg. Jour., vol. 79, p. 324, 1 fig., 1905.
   Describes faulting at Gibbonsville, Idaho.

Bagg (Rufus M., jr.).

1. Eocene Protozoa.

    Md. Geol. Surv., Eocene, pp. 233-258, 3 pls., 1901.

2. The genesis of ore deposits in Boulder County, Colorado.

    Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Jour. Geol., vol. 11, p. 100, 1903.

3. The veins of Boulder County, Colorado.

    Eng. & Mg. Jour., vol. 75, p. 334, 1903.
    Discusses the occurrence and the origin of the ore deposits.

4. Earthquakes in New Mexico.

    Am. Geol., vol. 34, pp. 102-104, 1904.

5. Secondary enrichment in the Santa Rita district [New Mexico].

    Eng. & Mg. Jour., vol. 77, pp. 153-154, 1904.
    Describes character and occurrence of copper deposits.

6. Systematic paleontology of the Miocene deposits of Maryland: Foraminifera.

    Md. Geol. Surv., Miocene, pp. 460-483, 3 pls., 1904.

7. Foraminifera collected from the bluffs at Santa Barbara, California.

    Am. Geol., vol. 35, pp. 123-124, 1905.
    Describes the occurrence and gives a list of species identified.

8. The Sahuayacan district, Mexico.

    Eng. & Mg. Jour., vol. 79, pp. 749-751, 7 figs., 1905.
    Contains notes upon the geology of the district.

9. Miocene Foraminifera from the Monterey shale of California.

    U. S. Geol. Surv., Bull. no. 268, 55 pp., 11 pls., 2 figs., 1905.
    Discusses the general relations of the Miocene foraminifera obtained from San Luis Obispo County, California, and the occurrence of existing representatives, and gives systematic descriptions. In an introductory note, J. C. Branner describes the geology of the Monterey shale bed from which the fossils were obtained.

Bailey (Edgar H. S.).

1. Special report on mineral waters [Kansas].

    Kans. Univ. Geol. Surv., vol. 7, 343 pp., 38 pls., 1902.

Bailey (Elbert W.), **Rath** (Charles M.), **Grider** (Richard L.).

1. A garnetiferous bed in Golden Gate Canyon, Jefferson County, Colorado.

    Colo. Sch. Mines, Bull., vol. 2, no. 4, pp. 80-86, 6 figs., 1905.
    Describes the general geology of the region, and the occurrence of garnets.

Bailey (Frank).

1. Copper deposits of the Aspen Grove camp, Similkameen, British Columbia.

    Mg. Rep., vol. 51, pp. 214-215, 3 figs., 1905.

Bailey (G. E.).

1. The desert dry lakes of California.

    Mg. & Sci. Press, vol. 89, pp. 138, 161, 174, 192-193, 205-206, 222-223, 241-242, 255, 8 figs., 1904.
    Describes physiographic features and the occurrence and production of borax.

Bailey (J. Trowbridge).

1. The ore deposits of Contact, Nevada.

    Eng. & Mg. Jour., vol. 76, pp. 612-613, illus., 1903.
    Describes observations upon the geology of the region and discusses the occurrence and origin of the ore deposits.

Bailey (L. W.).

1. On some modes of occurrence of the mineral albertite.

    Abstract: Science, new ser., vol. 13, p. 1018, 1901.

2. On some geological correlations in New Brunswick.

    Abstract: Science, new ser., vol. 13, pp. 1018-1019, 1901.
    Paper read before the Royal Society of Canada.

Bailey (L. W.)—Continued.

3. On some geological correlations in New Brunswick.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 7, sect. 4, pp. 143-150, 1901.
Discusses geologic age of formations previously referred to Cambro-Silurian in the light of new evidence.

4. On some modes of occurrence of the mineral albertite.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 7, sect. 4, pp. 77-83, 1901.
Discusses geologic occurrence.

5. New Brunswick.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 195-204, 1902.
Describes observations upon Cambrian, Ordovician, Silurian, and Carboniferous strata and economic products in this area.

6. Geological observations in northern New Brunswick.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 382-388, 1903.
Describes observations upon the geology of the region examined.

7. Notes on the highlands of northern New Brunswick.

New Brunswick Nat. Hist. Soc., Bull. no. 21 (vol. 5, pt. 1), pp. 93-101, 1903.
Contains observations on the geology of the region.

8. Report upon the Carboniferous system of New Brunswick with special reference to workable coal.

Can. Geol. Surv., Ann. Rept., new ser., vol. 13, 38 pp., 1903. (Published separately, 1902.)
Describes the extent, geologic structure, and divisions of the Carboniferous of New Brunswick, and the character, occurrence, and possible production of the coal beds, gives lists of fossils, and discusses the geologic horizon of certain beds.

9. New Brunswick caves.

New Brunswick Nat. Hist. Soc., Bull., vol. 5, pp. 155-169, 2 pls., 1904.
Discusses the origin of the various caves described and the geologic formations in which they occur.

10. The volcanic rocks of New Brunswick.

Can. Roy. Soc., Trans., 2d ser., vol. 10, sect. 4, pp. 123-138, 1 pl., 1905.
Describes the occurrence and extent of volcanic rocks in various geologic systems in Canada

11. Fossil occurrences and certain economic minerals in New Brunswick.

Can. Geol. Surv., Summ. Rept. for 1904, pp. 279-289, 1905.

Bain (H. Foster).

1. The origin of the Joplin ore deposits [Missouri].

Abstract: Eng. & Mg. Jour., vol. 71, p. 557, 1901.

2. Preliminary report on the lead and zinc deposits of the Ozark region. With an introduction by C. R. Van Hise and chapters on the physiography and geology by George I. Adams.

U. S. Geol. Surv., 22d Ann. Rept., pt. 2, pp. 23-227, 20 pls., 36 figs., 1901.
Discusses relations of ore deposits to the circulation of underground waters and describes the character and occurrence of minerals and ore deposits in this region.

3. The western interior coal field.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 333-366, 3 pls., 1 fig., 1902.
Describes extent, general geologic relations, stratigraphy, and structure of this coal field occupying parts of Iowa, Missouri, and Kansas, and the coals and coal beds.

4. Individuals of stratigraphic classification. Discussion.

Jour. Geol., vol. 10, pp. 139-143, 1902.
Discusses the subject of the point of view of the mining geologist.

5. [In discussion of "The origin of ore-deposits."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 936-942, 1902

6. Fluorspar deposits of southern Illinois.

U. S. Geol. Surv., Bull. no. 225, pp. 505-511, 1904.
Reviews history of the development of the fluorspar deposits, describes the the geology of the district, and the character and occurrence of the ore bodies, and discusses their origin.

Bain (H. Foster)—Continued.

7. [Geological nomenclature.]

   Jour. Geol., vol. 12, pp. 65–66, 1904.

8. Reported gold deposits of the Wichita Mountains [Oklahoma].

   58th Cong., 2d sess., Sen. Doc. no. 149, 10 pp., 1904.

   Describes the investigation of reputed gold deposits in Oklahoma. Includes a report on the assays by E. T. Allen.

9. Reported gold deposits of the Wichita Mountains.

   U. S. Geol. Surv., Bull. no. 225, pp. 120–122, 1904.

   Describes the general geology and the prospecting for gold.

10. Reported ore deposits of the Wichita Mountains.

    U. S. Geol. Surv., Professional Paper no. 31, pp. 82-93, 1904.

11. Lead and zinc deposits of Illinois.

    U. S. Geol. Surv., Bull. no. 225, pp. 202-207, 1904.

    Describes the geology, character, occurrence, and origin of the lead and zinc ores.

12. Fluorspar deposits of the Kentucky-Illinois district. Grades of ore, geology of the district, and genesis of the ores.

    Mines & Minerals, vol. 25, pp. 182-183, 1 fig., 1904.

    Describes the character, occurrence, geologic relations, genesis, and production of fluorspar deposits of southern Illinois and western Kentucky.

13. The zinc deposits of Missouri.

    Lead & Zinc News, vol. 8, pp. 223–225, 1904.

    Describes the general geology of the zinc districts of Missouri, with a generalized section of the Boone formation, the geological structure, and the character, occurrence, and origin of the zinc-ore deposits.

14. Zinc and lead deposits of northwestern Illinois.

    U. S. Geol. Surv., Bull. no. 246, 56 pp., 5 pls., 3 figs., 1905.

    Describes topographic features of the region, the general geology, the character, occurrence, geologic relations, and origin of the zinc and lead ores, and the mining developments.

15. Portland-cement resources of Iowa.

    U. S. Geol. Surv., Bull. no. 243, pp. 147-165, 1 pl., 1905.

    Describes the geologic relations, distribution, and character of limestones in Iowa suitable for the manufacture of Portland cement.

16. Lead and zinc resources of the United States.

    U. S. Geol. Surv., Bull. no. 260, pp. 251-273, 1905.

    Discusses the production and uses of lead and zinc and describes the character and occurrence of lead and zinc deposits in the United States.

17. Structural features of the Joplin district. Discussion of paper by C. E. Siebenthal.

    Econ. Geol., vol. 1, pp. 172-174, 1905.

18. The progress of economic geology in 1905.

    Mg. Mag., vol. 12, pp. 465–473, 1905.

19. The fluorspar deposits of southern Illinois.

    U. S. Geol. Surv., Bull. no. 255, 75 pp., 6 pls., 1 fig., 1905.

    Describes the physiography and general geology of the region, the character, occurrence, and relations of Devonian, Carboniferous, and Tertiary strata and igneous rocks, the geologic structure, and the occurrence, character, and origin of the fluorspar deposits.

Bain (H. Foster) and **Ulrich** (E. O.).

1. The copper deposits of Missouri.

   U. S. Geol. Surv., Bull. no. 260, pp. 233–235, 1905.

   Describes the occurrence and geologic relations of copper ores in Missouri.

2. The copper deposits of Missouri.

   U. S. Geol. Surv., Bull. no. 267, 52 pp., 1 pl., 2 figs., 1905.

   Describes the character, occurrence, relations, and nomenclature of Cambrian and Ordovician formations of Missouri, and the occurrence and mining of the copper-ore deposits.

Bain (H. Foster), **Eckel** (E. C.) and.

1. Cement and cement materials of Iowa.

See **Eckel** (E. C.) and **Bain** (H. F.), 1.

Bain (H. Foster), **Van Hise** (C. R.) and.

1. Lead and zinc deposits of the Mississippi Valley, U. S. A.

See **Van Hise** (C. R.) and **Bain** (H. F.), 1.

Baker (Frank C.)

1. Pleistocene mollusks of White Pond, New Jersey.

Nautilus, vol. 17, pp. 38-39, 1903.
Gives a list of and notes upon the molluscan fauna of this locality.

Baker (M. B.)

1. On the occurrence and development of corundum in Ontario.

Can. Mg. Inst., Jour., vol. 7, pp. 410-421, 1904.

Ball (Sydney H.)

1. The deposition of the Carboniferous formations of the north slope of the Ozark uplift.

Jour. Geol., vol. 12, pp. 335-343, 8 figs., 1904.
Describes the occurrence and character of Carboniferous strata and the geologic history of their deposition.

Ball (Sydney H.) and **Smith** (A. F.)

1. The geology of Miller County [Missouri].

Mo. Bur. Geol. & Mines, 2d ser., vol. 1, pp. 1-197, 18 pls., 56 figs., 1903.
Describes the physiography and drainage, the character, occurrence, geologic relations, and economic resources of Cambro-Ordovician and Carboniferous formations, including numerous sections of strata, and discusses the general geologic structure and the origin of chert and dolomite.

Ball (Sydney H.) and **Smith** (A. F.), **Buckley** (E. R.).

1. Glacial bowlders along the Osage River in Missouri.

See **Buckley** (E. R.), **Ball** (S. H.), and **Smith** (A. F.), 1.

Bancroft (George J.).

1. The Yaqui River country of Sonora, Mexico.

Eng. & Mg. Jour., vol. 76, pp. 160-162, illus., 1903.
Contains observations on placer deposits of gold.

Bancroft (J. Austen).

1. Ice-borne sediments in Minas Basin, Nova Scotia.

Nova Scotian Inst. Sci., Proc. & Trans., vol. 11, pp. 158-162, 1905.

Barber (William Burton).

1. On the lamprophyres and associated igneous rocks of the Rossland mining district, British Columbia.

Am. Geol., vol. 33, pp. 335-347, 6 pls., 1904.

Barber (William B.), **Nutter** (Edward H.) and.

1. On some glaucophane and associated schists in the Coast ranges of California.

See **Nutter** (E. H.) and **Barber** (W. B.), 1.

Barbour (Carrie Adeline).

1. Some methods of collecting, preparing, and mounting fossils.

Nebr. St. Hist. Soc., Proc. and Coll., 2d ser., vol. 2, pp. 258-264, 1 fig., 1898.
Contains directions for collecting and preparing remains of fossil vertebrates.

2. Observations on the concretions of the Pierre shale.

Nebr. Acad. Sci., Proc., vol. 7, pp. 36-38, 1 pl., 1901.
Describes the occurrences and character of the concretions.

Barbour (Erwin Hinckley).

1. The barites of Nebraska and the Bad Lands.

Nebr. St. Hist. Soc., Proc. and Coll., 2d ser., vol. 2, pp. 265-268, 3 pls., 1 fig., 1898.

Barbour (Erwin Hinckley)—Continued.

2. Chalcedony-lime nuts from the Bad Lands, Archihicoria siouxensis gen. et sp. nov.
   Nebr. St. Hist., Soc., Proc. and Coll., 2d ser., vol. 2, pp. 272-274, 1 pl., 1 fig., 1898.

3. Discovery of meteoric iron in Nebraska.
   Nebr. St. Hist. Soc., Proc. and Coll., 2d ser., vol. 2, pp. 275-279, 1 pl., 4 figs., 1898.
   Describes occurrence of a meteorite near York, Nebraska.

4. The unpublished meteorites of Nebraska.
   Nebr. Acad. Sci., Proc., vol. 7, pp. 34-35, 1 pl., 1901.
   Describes new meteorites.

5. The State [Nebraska] Geological Survey. Report of progress for the summer of 1900.
   Nebr. Acad. Sci., Proc., vol. 7, pp. 166-169, 2 pls., 1901.
   Gives an account of the work conducted by the State Geological Survey.

6. Sand crystals and their relation to certain concretionary forms.
   Geol. Soc. Am., Bull., vol. 12, pp. 165-172, 6 pls., 1901.
   Describes the character and occurrence of the crystals and concretionary forms in the Tertiary strata of the Plains region.

7. Volcanic ash in Nebraska soils.
   Nebr. St. Bd. Agr., Ann. Rept. for 1901, pp. 238-242, 6 figs., 1902.
   Describes character and occurrence of this substance.

8. Report of the State geologist.
   Nebr. Geol. Surv., vol. 1, 258 pp., 13 pls., 166 figs., 1903.
   Describes physiography, hydrography, drainage and water resources, stratigraphy and general geological relations of formations, with lists of fossils contained therein, mineral resources and economic products.

9. Present knowledge of the distribution of Daimonelix.
   Science, new ser., vol. 18, pp. 504-505, 1903.

10. Memoir of Wilbur Clinton Knight.
    Geol. Soc. Am., Bull., vol. 15, pp. 544-549, 1 pl. (por.), 1904.
    Includes a list of his published writings.

11. A new Miocene artiodactyl.
    Science, new ser., vol. 22, pp. 797-798. 1 fig. 1905.

Barbour (Erwin Hinckley) and **Fisher** (Cassius A.).

1. The geological bibliography of Nebraska.
   Nebr. St. Bd. Agr., Ann. Rept. for 1901, pp. 248-266 1902.

2. A new form of calcite-sand crystal.
   Am. Jour. Sci., 4th ser., vol. 14. pp. 451-454, 4 figs. 1902.
   Describes and figures material from South Dakota and Wyoming. Notes their stratigraphic range.

Barlow (Alfred Ernest).

1. Descriptions of rocks collected in 1900, by J. Mackintosh Bell, M. A., in Great Bear Lake district and thence to Great Slave Lake.
   Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 29C-36C, 1902.

2. Microscopic examination of sections of rocks associated with the iron-ore deposits of the Kingston and Pembroke Railway district.
   Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 81 i-91 i, 1902.

3. The Sudbury district [Ontario].
   Can. Geol. Surv., Summ. Rept. for 1901, pp. 141-145, 1902.
   Describes observations chiefly of a petrological and mineralogical character made in this area.

4. On the nepheline rocks of Ice River, British Columbia.
   Ottawa Nat., vol. 16, pp. 70-76, 1902.
   Contains a brief discussion of magmatic differentiation and a description of the rock types of the hand specimens.

Barlow (Alfred Ernest)—Continued.

5. Dr. Alfred R. C. Selwyn . . . director, Geological Survey of Canada, 1869–1894.

Ottawa Nat., vol. 16, pp. 171-177, por., 1902.
Gives a sketch of the life and work of Dr. Selwyn.

6. The Sudbury mining district [Ontario].

Can. Geol. Surv., Summ. Rept. for 1902, pp. 252-267, 1903.
Describes petrographic characters of rock types and discusses the occurrence, character, and origin of nickel and copper ore deposits.

7. The Temagami district [Ontario].

Can. Geol. Surv., Summ. Rept. for 1903, pp. 120-133, 1 map, 1904.
Gives notes upon the geology of the region examined and the exploration for iron ores.

8. Report on the origin, geological relations, and composition of the nickel and copper deposits of the Sudbury mining district, Ontario, Canada.

Can. Geol. Surv., Ann. Rept., vol. 14, pt. H, 236 pp., 24 pls. and 5 maps, 1904.

9. A landslide on the Lievre River [Quebec].

Ottawa Nat., vol. 18, pp. 181-190, 4 pls., 1905.

10. On corundum in Ontario and on surveys near Lake Temagami.

Can. Geol. Surv., Summ. Rept. for 1904, pp. 190-194, 1905.

Barnett (V. H.).

1. Notice of the discovery of a new dike at Ithaca, N. Y.

Am. Jour. Sci., 4th ser., vol. 19, p. 210, 1905.
Describes the occurrence and character of a newly discovered dike at this locality.

Barney (W. G.).

1. The Silver Bell Mountains, Arizona.

Eng. & Mg. Jour., vol. 78, pp. 755-756, 1904.
Describes the occurrence, character, and geologic relations of copper-ore deposits.

Barnum (George).

1. Heat and frost in the weathering of stone.

Stone, vol. 25, pp. 222-228, 1 pl., 1902.
Discusses the action of heat and frost in rock disintegration.

Baron (J. Francis Patch-Le).

1. Some geological notes in Honduras, Central America.

Abstract: Science, new ser., vol. 16, pp. 264-265, 1902.
Gives a general account of the geology of this country.

Barrell (Joseph).

1. Microscopical petrography of the Elkhorn mining district, Jefferson County, Montana.

U. S. Geol. Surv., 22d Ann. Rep., pt. 2, pp. 511-549, 1 pl., 1901.
Gives an account of the petrographical characters of the various rock types of the Elkhorn mining district, Montana.

2. The physical effects of contact metamorphism.

Am. Jour. Sci., 4th ser., vol. 13, pp. 279-296, 1902. Abstract: Am. Geol., vol. 29, pp. 313-317, 1902.
Discusses the decomposition of rocks, the changes of mass and volume through metamorphism and the results of escape of gases.

Barton (George H.).

1. Outline of elementary lithology.

Boston, 112 pp., 1901. (Not seen.)

Bartow (Edward).

1. Water supplies of southeastern Kansas.

Kans. Acad. Sci., Trans., vol. 19, pp. 39-48, 1905.

Bartow (Edward) and **McCollum** (Elmer V.).

1. Kansas petroleum.

Kans. Acad. Sci., Trans., vol. 19, pp. 56-59, 1905.
Gives notes on the character and composition of petroleum from Kansas and other oil fields.

Bartsch (Paul), **Dall** (W. H.) and.

1. A new Californian Bittium.

See Dall (W. H.) and Bartsch (Paul), 1.

2. Synopsis of the genera, subgenera, and sections of the family Pyramidellidæ.

See Dall (W. H.) and Bartsch (P.), 2.

Bascom (Florence).

1. The geology of the crystalline rocks of Cecil County [Maryland].

Md. Geol. Surv., Cecil Co., pp. 83-148, 4 pls., 3 figs., 1902.

Discusses the character, composition, and distribution of the crystalline rocks of the county. A glossary of technical terms is added by E. B. M[athews].

2. Water resources of the Philadelphia district.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 106, 75 pp., 4 pls., 3 figs., 1904.

Includes a short general account of the physiography and stratigraphy, and of the igneous and sedimentary rocks of the area.

3. Piedmont district of Pennsylvania.

Geol. Soc. Am., Bull., vol. 16, pp. 289-328, 17 pls., 1905.

Describes the geography and general geology of the Piedmont district of Pennsylvania, the character, occurrence, and relations of pre-Cambrian, Cambrian, and Ordovician formations, and the petrologic characters and relations of the igneous rocks occurring in the area

Baskerville (Charles).

1. Kunzite, a new gem.

Science, new ser., vol. 18, pp. 303-304, 1903.

Describes characters of the spodumene obtained from San Diego County, California, and gives to this gem the name of kunzite.

Baskerville (Charles) and **Kunz** (George F.).

1. Kunzite and its unique properties.

Am. Jour. Sci., 4th ser., vol. 18, pp. 25-28, 2 figs., 1904.

Bassler (Ray S.).

1. The structural features of the bryozoan genus Homotrypa, with descriptions of species from the Cincinnatian Group.

U. S. Nat. Mus., Proc., vol. 26, pp. 565-591, 6 pls., 1903.

2. Portland-cement resources of Virginia.

U. S. Geol. Surv., Bull. no. 243, pp. 312-323, 1 pl., 1905.

Describes the character, occurrence, and geologic relations of limestones and shales of Virginia suitable for the manufacture of Portland cement.

3. Cement materials of the valley of Virginia.

U. S. Geol. Surv., Bull. no. 260, pp. 531-544, 2 figs., 1905.

Describes the general geology of the region, and the occurrence, character, and location of limestones, shales, and marls suitable for the manufacture of cement.

4. The subdivisions of the Shenandoah limestone.

Abstract: Science, new ser., vol. 22, p. 756, 1905.

Bassler (R. S.), **Ulrich** (E. O.) and.

1. A revision of the Paleozoic bryozoa. Part I. On genera and species of Ctenostomata.

See **Ulrich** (E. O.) and **Bassler** (R. S.), 1.

2. A revision of the Paleozoic bryozoa. Part II. On genera and species of Trepostomata.

See **Ulrich** (E. O.) and **Bassler** (R. S.), 2.

3. Systematic paleontology of the Miocene deposits: Ostracoda.

See **Ulrich** (E. O.) and **Bassler** (R. S.), 3.

4. Systematic paleontology of the Miocene deposits: Bryozoa.

See **Ulrich** (E. O.) and **Bassler** (R. S.), 4.

Bastin (E. S.).

1. Note on the baked clays and natural slags in eastern Wyoming.

Jour. Geol., vol. 13, pp. 408–412, 1905.

Describes the occurrence and character of certain strata which have been modified by the burning of underlying lignite seams.

Bateman (G. C.).

1. Notes on graphite, its occurrences, uses, and production.

Can. Mg. Inst., Jour., vol. 8, pp. 343–348, 1905.

B[ather] (F. A.).

1. The term Bradfordian.

Science, new ser., vol. 19, pp. 434–435, 1904.

Calls attention to the fact that the term Bradfordian has been used for European Mesozoic rocks.

Bauer (Max).

1. Jadeit und Chloromelanite in Form prähistorischer Artefakte aus Guatemala.

Centralbl. f. Min., Geol. u. Pal., pp. 65–79, 1 fig., 1904.

Describes the character and structure of jade and chloromelanite used by prehistoric people in Guatemala.

Baxter (Florus R.).

1. Petroleum: a class-room talk.

Rochester, N. Y., Vacuum Oil Company [1905]. 47 pp., 12 figs.

A general account of petroleum: the history of its discovery, geographic and geologic occurrence, origin, chemical composition, production, and utilization.

Bayley (William Shirley).

1. The Menominee iron-bearing district of Michigan.

U. S. Geol. Surv., Mon., vol. 46, 513 pp., 43 pls., 54 figs., 1904.

Reviews the literature bearing on the subject, describes the physiography of the region, the character and occurrence of Archean, Algonkian, and Paleozoic rocks, and the occurrence, character, and mining of the iron ores, and gives an outline of the geologic history.

2. Notes on the wells, springs, and general water resources of Maine.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 27–55, 1904.

3. Underground waters of eastern United States: Maine.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 41–56, 1 fig., 1905.

Describes the underground water supply of Maine.

Beadle (H. M.).

1. Gold mining in eastern Oregon.

Eng. & Mg. Jour., vol. 73, p. 136, 1902.

Beard (J. Carter).

1. Three characteristic types of American dinosaurs.

Sci. Am., vol. 84, pp. 184–185, 1 fig., 1901.

2. Something about ancient American saurians.

Sci. Am., vol. 85, p. 267, 1 fig., 1901.

Describes their general characteristics.

Beasley (Walter L.).

1. Evolution of the horse.

Sci. Am., vol. 88, pp. 451–452, illus., 1903

2. A remarkable fossil discovery.

Sci. Am., vol. 89, p. 87, illus., 1903.

Describes the discovery of a large skull of Triceratops, and the probable habits, size, appearance, etc., of the animal.

Beck (Richard).

1. [In discussion of "The origin of ore deposits."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 944–947, 1902.

Beck (Richard)--Continued.

2. The nature of ore deposits. Translated and revised by Walter Harvey Weed.

New York, The Engineering and Mining Journal, 1905. 2 vols., 685 pp., 272 figs. and a map.
Contains descriptions of American ore deposits.

Becke (F.).

1. Optische Orientirung des Albit von Amelia, Virginia.

Tschermak's Min. u. Petrogr. Mitt., N. F., Bd. 19, pp. 321-335, 5 figs., 1900.
Describes crystallographic features of an albite from Amelia, Virginia.

Becker (George F.).

1. Report on the geology of the Philippine Islands, followed by a version of "Ueber Tertiare fossilien von den Philippinen" (1895), by K. Martin.

U. S. Geol. Surv., 21st Ann. Rept., pt. 3, pp. 493-625, 3 pls., 2 figs., 1901. Abstract: Am. Geol., vol. 28, pp. 126-127, 1901.
Describes the character of the igneous rocks and the mineral resources. Includes a bibliography and a translation of a paper by K. Martin on the Tertiary fossils of the Philippines.

2. Construction of geophysical laboratory.

Carnegie Inst. of Wash., Yearb. no. 2, 1903, pp. 185-194, 1904.

3. Experiments on schistosity and slaty cleavage.

U. S. Geol. Surv., Bull. no. 241, 34 pp., 7 pls., 1904.
Describes experiments to determine the cause of cleavage and schistosity in rocks, and discusses the results obtained.

4. Present problems of geophysics.

Science, new ser., vol. 20, pp. 545-556, 1904; Am. Geol., vol. 35, pp. 4-22, 1905; Eng. & Mg. Jour., vol. 78, pp. 743-744, 1904 (in part).

5. The isomorphism and thermal properties of the feldspars. Introduction.

Carnegie Inst. of Wash., Publ. no. 31, pp. 3-12, 1905.

6. Simultaneous joints.

Wash. Acad. Sci., Proc., vol. 7, pp. 267-275, 1 pl., 1905; Eng. & Mg. Jour., vol. 79, pp. 1182-1184, 9 figs., 1905.
Discusses systems of joints of simultaneous origin and how they were produced.

Becker (George F.) and **Day** (Arthur L.).

1. The linear force of growing crystals.

Wash. Acad. Sci., Proc., vol. 7, pp. 283-288, 1 fig., 1905.

Beecher (Charles Emerson).

1. Studies in evolution; mainly reprints of occasional papers selected from the publications of the laboratory of invertebrate paleontology, Peabody Museum, Yale University.

Yale Bicentennial Publications, 638 pp. 34 pls., 132 figs., 1901. Charles Scribner's Sons, New York.
Contains discussions on the origin and significance of spines, structure and development of trilobites, studies in the development of the Brachiopoda, development of a Paleozoic poriferous coral, symmetrical cell development in the Favositidæ, and development of the shell in the genus Tornoceras Hyatt.

2. Note on the Cambrian fossils of St. François County, Missouri.

Am. Jour. Sci., 4th ser., vol. 12, pp. 362-363, 1901.
Discusses the fossil evidence indicating that a considerable thickness of the rocks of this region are to be referred to the Cambrian.

3. Discovery of eurypterid remains in the Cambrian of Missouri.

Am. Jour. Sci., 4th ser., vol. 12, pp. 364-366, 1 pl., 1901.
Describes Strabops thatcheri n. gen. et sp.

4. The ventral integument of trilobites.

Am. Jour. Sci., 4th ser., vol. 13, pp. 165-174, 4 pls., 1 fig., 1902.
Describes the characters of the ventral integuments in Triarthrus which demonstrate that the conclusions of Jaekel in his study of Ptychoparia are erroneous.

Beecher (Charles Emerson)—Continued.

5. Notes on a new Xiphosuran from the Upper Devonian of Pennsylvania.

   Am. Geol., vol. 29, pp. 143–146, 1 fig., 1902.
   Describes Prestwichia randalli n. sp.

6. The reconstruction of a Cretaceous dinosaur, Claosaurus annectens Marsh.

   Conn. Acad. Arts & Sci., Trans., vol. 11, pt. 1, pp. 311–324, 6 figs., 5 pls., 1902.

7. The ventral integument of trilobites.

   Geol. Mag., dec. 4, vol. 9, pp. 152–162, 3 pls., 8 figs., 1902.
   Discusses the ventral integument and appendages of trilobites.

8. Revision of the Phyllocarida from the Chemung and Waverly groups of Pennsylvania.

   London Geol. Soc., Quart. Jour., vol. 58, pp. 441–449, 3 pls., 1902.

9. Observations on the genus Romingeria.

   Am. Jour. Sci., 4th ser., vol. 16, pp. 1–11, 4 pls., 1903.
   Reviews the history of the genus and type species and describes the type and other species.

10. Note on a new Permian Xiphosuran from Kansas.

    Am. Jour. Sci., 4th ser., vol. 18, pp. 23–24, 1 fig., 1904.

Beede (Joshua W.).

1. Carboniferous invertebrates.

   Kans. Univ. Geol. Surv., vol. 6, pp. 1–187, 22 pls., 4 figs., 1900.

2. Fauna of the Permian of the central United States. Part I.

   Kans. Acad. Sci., Trans., vol. 17, pp. 185–189, 2 pls., 1901.
   Describes several new species.

3. The age of the Kansas-Oklahoma red beds.

   Am. Geol., vol. 28, pp. 46–47, 1901.
   Describes the occurrence of fossils recently found, indicating the Permian age of the beds.

4. New fossils from the upper Carboniferous of Kansas.

   Kans. Univ., Sci. Bull., vol. 1, pp. 147–151, 1 pl., 1902.

5. Variation of the spiralia in Seminula argentia (Shepard) Hall.

   Kans. Univ., Sci. Bull., vol. 1, pp. 155–157, 1 pl., 1902.

6. Coal Measures faunal studies, II. Fauna of the Shawnee formation (Haworth), the Wabaunsee formation (Prosser), the Cottonwood limestone.

   Kans. Univ., Sci. Bull., vol. 1, pp. 163–181, 1902.
   Describes geologic formations and gives lists of fossils from them.

7. Note on the variation of the spires in Seminula argentia (Shepard) Hall.

   Ind. Acad. Sci., Proc. for 1901, pp. 221–222, 1902.

8. Invertebrate paleontology of the Red Beds [Oklahoma].

   Okla. Geol. Surv., Adv. Bull., 1st Bien. Rept., 9 pp., 1 pl., 1902.
   Discusses the age of the Red Beds and describes fossils collected from them.

Beede (Joshua W.) and **Rogers** (Austin F.).

1. Coal Measures faunal studies, III. Lower Coal Measures.

   Kans. Univ., Sci. Bull., vol. 2, pp. 459–473, 1904.
   Describes the character and occurrence of lower Coal Measures formations and gives lists of fossils obtained from them.

Beede (Joshua W.) and **Sellards** (E. H.).

1. Stratigraphy of the eastern outcrop of the Kansas Permian.

   Am. Geol., vol. 36, pp. 83–111, 2 pls., 1905.
   Describes the occurrence and character of Permian formations in Kansas, giving numerous detailed sections.

Beede (Joshua W.), **Prosser** (Charles S.) and.

1. Cottonwood Falls folio, Kansas.

   See **Prosser** (Charles S.) and **Beede** (J. W.), 1.

Beeler (Henry C.).

1. A brief review of the South Pass gold district, Fremont County, Wyoming.

    12 pp., 1903. [Privately printed?]

    Includes a brief account of the geology of the region.

2. A report to the governor of Wyoming by the State geologist.

    Cheyenne, Wyo., Daily Leader Publishing Co., 1904. 39 pp.

3. Geology and mineral resources of Wyoming.

    Am. Mg. Cong., 7th Ann. Sess., Rept. of Proc., pp. 113-118, 1905.

    A general account of the geology and mineral resources of Wyoming.

Bel (J. M.).

1. Voyage minier au nord-ouest Canadien.

    Soc. des Ing. Civils de France, Mém., 6e sér., 57e ann., pp. 580-641, 4 pls., 1904.

    Gives a general account of the region of the Klondike, and more especially of the mineral resources, including the general geology, the occurrence of alluvial and vein gold-ore deposits, and the methods of mining.

2. Gites aurifères du Klondike (Yukon, Canada).

    Bull. trim. Soc. de l'Industrie Min., St. Etienne, 4e sér., t. 4, pp. 275-316, 3 pls. (maps), and 8 figs., 1905.

    Describes the occurrence, geologic relations, and mining of gold deposits in the Klondike region.

Bell (J. Macintosh).

1. Report on the topography and geology of Great Bear Lake and of a chain of lakes and streams thence to Great Slave Lake.

    Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 1C-36C, 1902.

2. Economic resources of Moose River Basin [Ontario].

    Ont. Bur. Mines, Rept., 1904, pt. 1, pp. 134-197, 21 pls., 1904.

    Includes observations on the occurrence, character, and geologic relations of pre-Cambrian, Paleozoic, and Pleistocene rocks and deposits, the physiographic features, and the economic resources.

3. Iron ranges of Michipicoten west [Ontario].

    Ont. Bur. Mines, Rept., 1905, vol. 14, pt. 1, pp. 278-355, illus., 1905.

    Describes the physiography, stratigraphy, and petrography of the region examined and the occurrence, character, and relations of the deposits of iron ore.

Bell (Ralston).

1. How copper is produced.

    Mg. Rep., vol. 50, pp. 636-637, 662-663, 690-692, 1904.

    Includes notes upon the geologic occurrence of copper.

Bell (Robert).

1. Report on an exploration of the northern side of Hudson Strait [Canada].

    Can. Geol. Surv., new ser., vol. 11, Rept. M, 38 pp., 4 pls. and geologic map, 1901.

    Contains notes on the physiographic features and ancient gneisses and limestones and Silurian strata of the region.

2. Laurentian limestones of Baffinland.

    Abstract: Geol. Soc. Am., Bull., vol. 12, p. 471, 1901; Science, new ser., vol. 13, p. 100, 1901.

3. Summary report on the operations of the Geological Survey [Canada] for the year 1901.

    Can. Geol. Surv., Summ. Rept. for 1901, 269 pp., maps nos. 751-764, 1902.

4. Summary report on the operations of the Geological Survey of Canada for the calendar year 1902.

    Can. Geol. Surv., Summ. Rept. for 1902, 482 pp., 1903.

    Reviews the operations of the year of the Geological Survey of Canada. Includes reports by officials of the survey.

5. Report on the geology of the basin of the Nottaway River.

    Can. Geol. Surv., Ann. Rept., new ser., vol. 13, 11 pp., 1 map, 1903. (Published separately, 1902.)

    Describes the character and occurrence of Laurentian and Huronian rocks in this region.

Bell (Robert)—Continued.

6. Volcanic origin of natural gas and petroleum.

Can. Mg. Inst., Jour., vol 6, pp. 126-128, 1904.

7. Summary report on the operations of the Geological Survey of Canada for the calendar year 1903.

Can. Geol. Surv., Summ. Rept. for 1903, 218 pp., 1904.

8. Summary report of the Geological Survey of Canada for the calendar year 1904.

Can. Geol. Surv., Rept. for 1904, pp. i-xxxviii, 1905.

Outlines the work of the Geological Survey of Canada for the year 1904. Includes the report of the special committee on the Lake Superior region.

9. The advantages of combining topographical with geological surveying in unexplored regions.

Abstract: Can. Mg. Inst., Jour., vol. 8, pp. 56-58, 1905.

Bell (Robert).

1. An outline of Idaho geology and of the principal ore deposits of Lemhi and Custer counties, Idaho.

Int. Mg. Cong., 4th session, Proc., pp. 64-80, 1901.

2. Thunder Mountain and Mackay, Idaho.

Min. & Sci. Press, vol. 84, p. 62, 1902.

Describes the occurrence of gold and developments of the region.

3. The origin of the fine gold of Snake River.

Eng. & Mg. Jour., vol. 73, pp. 143-144, 1902.

Describes the occurrence of gold bearing terraces of a Tertiary lake.

4. The geology of Thunder Mountain and central Idaho.

Eng. & Mg. Jour., vol. 73, pp. 791-793, 1902.

Describes the general geology of the region.

5. Facts about Thunder Mountain [Idaho].

Eng. & Mg. Jour., vol. 74, pp. 273-275, 4 figs., 1902.

Contains notes on the geologic structure of the region and sections of strata.

Bell (Robert N.).

1. Tin ledges in Alaska.

Eng. & Mg. Jour., vol. 76, p. 820, 1903.

Describes the discovery of ledges containing tin ore in the vicinity of Port Clarence, Alaska.

2. Tin in Alaska.

Mg. & Sci. Press, vol. 87, p. 351, 1903.

Describes the occurrence of tin-ore deposits.

3. The mining industry of Idaho.

Ores & Metals, vol. 13, no. 15, pp. 22-32, illus., 1904.

Gives a brief account of the general geology of the state, and the occurrence and production of ores by counties.

4. Geology of Park City, Utah, district.

Lead & Zinc News, vol. 8, pp. 57, 60, 1904.

Describes the general geology and the occurrence of lead-ore deposits.

5. The geology and mineral resources of Idaho.

Am. Mg. Cong., 7th Ann. Sess., Rept. of Proc., pp. 200-226, 1905.

Bell (W. T.).

1. The remarkable concretions of Ottawa County, Kansas.

Am. Jour. Sci., 4th ser., vol. 11, pp. 315-316, 2 figs., 1901.

Describes the occurrence of concretionary masses of crystalline limestone, most of them in place.

Belowsky (Max).

1. Beiträge zur Petrographie des westlichen Nord-Grönlands.

Deutsch. geol. Gesellsch., Zeitschr., Bd. 57, pp. 15-19, 1905.

Bendrat (T. A.).

1. The geology of Lincoln County, South Dakota, and adjacent portions.

   Am. Geol., vol. 33, pp. 65-94, 2 pls., 1904.
   Describes the topography and drainage, the character and occurrence of Algonkian and Cretaceous strata and glacial deposits.

Bensley (B. Arthur).

1. On the identification of Meckelian and mylohyoid grooves in the jaws of Mesozoic and recent mammalia.

   Toronto Univ. Studies, Biol. ser., no. 3, 9 pp., 1 pl., 1902.

Bergeat (Alfred).

1. Ein Rückblick auf die vulkanischen Ereignisse in Westindien im Mai 1902.

   Globus, Bd. 82, pp. 125-131, 1902.
   Reviews the volcanic eruptions in the West Indian Islands during 1902.

2. Die Produkte der letzten Eruption am Vulkan S. Maria in Guatemala (Oktober 1902).

   Centralbl. f. Min., pp. 112-117, 1903.
   Describes character and composition of material ejected by the volcano S. Maria.

3. Einige weitere Bemerkungen über die Produkte des Ausbruchs am Sta. Maria, Guatemala.

   Centralbl. f. Min., pp. 290-291, 1903.
   Gives results of investigations upon the composition of ashes ejected by S. Maria, Guatemala.

Berger (W. F. B.).

1. Bauxite in Arkansas.

   Eng. & Mg. Jour., vol. 77, pp. 606-607, 2 figs., 1904.
   Describes character and occurrence of bauxite, and the mining operations in Arkansas.

Berkey (Charles Peter).

1. A guide to The Dalles of the St. Croix for excursionists and students.

   Minneapolis, 40 pp., illus., 1898. (Private publication.)
   Describes the geologic history and structure of the region, physiographic and erosion features, and the character and occurrence of Cambrian strata and igneous rocks.

2. Sacred Heart "geyser spring" [Minnesota].

   Am. Geol., vol. 29, pp. 87-88, 1902.

3. Origin and distribution of Minnesota clays.

   Am. Geol., vol. 29, pp. 171-177, 1902.
   Describes the occurrence of the Ordovician, Cretaceous, and glacial clays.

4. Mineral resources of the Uinta Mountains [Utah].

   Eng. & Mg. Jour., vol. 77, p. 841, 1904.
   Discusses the stratigraphy and geologic structure of the Uinta Mountains and their mineral resources.

5. A geological reconnaissance of the Uinta Reservation, southeastern Utah.

   Abstract: Science, new ser., vol. 19, p. 618, 1904.
   Describes stratigraphic succession in this region.

6. Laminated interglacial clays of Grantsburg, Wis. With chronological deductions.

   Jour. Geol., vol. 13, pp. 35-44, 1 fig., 1905.
   Describes the occurrence, character, and composition of clays of this vicinity, and discusses their origin, geologic relationships, and manner and time of deposition.

7. Economic geology of the Pembina region of North Dakota.

   Am. Geol., vol. 35, pp. 142-152, 4 figs., 1905.
   Describes the character and occurrence of Cretaceous strata in this region, and the occurrence and utilization of cement marls.

8. Stratigraphy of the Uinta Mountains.

   Geol. Soc. Am., Bull., vol. 16, pp. 517-530, 2 pls. and 3 figs., 1905.
   Discusses the occurrence, character, and relations of the formations of the Uinta Mountains of Utah, and the correlation of the Wasatch and Uinta sections.

Berkey (Charles Peter)—Continued.

9. [Paleogeography of St. Peter time.]

   Abstract: Science, new ser., vol. 21, p. 221, 1905.

10. Interpretation of certain laminated clays, with their bearing upon estimates of geologic time.

    Abstract: Science, new ser., vol. 21, p. 426, 1905.

11. The paleogeography of Mid-Ordovicic time.

    Abstract: Science, new ser., vol. 21, p. 989, 1905.

Berry (Edward Wilber).

1. Notes on the phylogeny of Liriodendron.

   Bot. Gazette, vol. 34, pp. 44–63, 1 fig., 1902.

2. Notes on sassafras.

   Bot. Gazette, vol. 34, pp. 426–450, 1 pl., 4 figs., 1902.

3. The American species referred to Thinnfeldia.

   Torrey Bot. Club, Bull., vol. 30, pp. 438–445, 1903.

4. New species of plants from the Matawan formation.

   Am. Nat., vol. 37, pp. 677–684, 9 figs., 1903.

5. The flora of the Matawan formation (Crosswicks clays).

   N. Y. Bot. Garden, Bull., vol. 3, no. 9, pp. 45–103, 15 pls., 1903.

   Discusses occurrence and lithologic characters of the Matawan formation and its subdivisions in New Jersey, the character and relationships of the flora collected near Cliffwood, New Jersey, and gives detailed descriptions of the plants.

6. Aralia in American paleobotany.

   Bot. Gazette, vol. 36, pp. 421–428, 1903.

   Discusses leaf characters in fossil species of Aralia.

7. Additions to the flora of the Matawan formation.

   Torrey Bot. Club, Bull., vol. 31, pp. 67–82, 5 pls., 1904.

8. The Cretaceous exposure near Cliffwood, N. J.

   Am. Geol., vol. 34, pp. 253–260, 1 pl., 1904.

   Discusses the correlation of the Cretaceous clays at Cliffwood, N. J., in the light of the evidence of the fossil plants. Gives a table showing the geologic distribution of the fossil species from the Matawan.

9. Additions to the fossil flora from Cliffwood, New Jersey.

   Torrey Bot. Club, Bull., vol. 32, pp. 43–48, 2 pls., 1905.

10. Fossil grasses and sedges.

    Am. Nat., vol. 39, pp. 345–348, 1 fig., 1905.

    Discusses their geologic occurrence, and describes a new species of Carex.

11. A palm from the mid-Cretaceous.

    Torreya, vol. 5, pp. 30–33, 1 fig., 1905.

12. An old swamp bottom.

    Torreya, vol. 5, pp. 179–182, 1 fig., 1905.

    Gives notes upon the fossil plants occurring in Cretaceous deposits in Monmouth County, N. J.

13. The ancestors of the big trees.

    Pop. Sci. Monthly, vol. 67, pp. 465–474, 4 figs., 1905.

14. A Ficus confused with Proteoides.

    Torrey Bot. Club, Bull., vol. 32, pp. 327–330, 1 pl., 1905.

Beyer (S. W.).

1. Mineral production of Iowa in 1901.

   Iowa Geol. Surv., vol. 12, Ann. Rept., 1901, pp. 39–61, 2 pls., 1 fig., 1902.

   Includes a discussion of the occurrence and production of iron ore at Iron Hill, Allamakee County, Iowa.

Beyer (S. W.)—Continued.

2. Iowa's iron mine.

Eng. & Mg. Jour., vol. 73, pp. 275-276, 2 figs., 1902.
Describes the occurrence, character, and origin of the ore.

3. Mineral production of Iowa in 1902.

Iowa Geol. Surv., vol. 14, Ann. Rept., 1903, pp. 7-26, 1904.

4. Mineral production in Iowa in 1904.

Iowa Geol. Surv., vol. 15, Ann. Rept., 1904, pp. 15-32, 1905.

Beyer (S. W.) and **Williams** (I. A.).

1. Technology of clays.

Iowa Geol. Surv., vol. 14, pp. 29-318, 7 pls., 30 figs., 1904.
Discusses the classification, origin, and properties of clays, and manufacture of clay wares.

2. The geology of clays.

Iowa Geol. Surv., vol. 14, pp. 377-554, 22 pls., 41 figs., 1904.
Describes in detail the occurrence, by counties, of clays in Iowa, and their geologic horizons.

Beyer (S. W.) and **Young** (L. E.).

1. Geology of Monroe County [Iowa].

Iowa Geol. Surv., vol. 13, pp. 355-422, 2 pls., 20 figs., 1903.
Describes topography and drainage, the character, occurrence, and geologic relations of Carboniferous strata and glacial deposits, the character and occurrence of coal seams, coal-mining operations in the county, and other economic resources.

Bibbins (Arthur B.).

1. Occurrence of zoisite and thulite near Baltimore [Maryland].

Am. Jour. Sci., 4th ser., vol. 11, pp. 171-172, 1901.
From notes by the late John W. Lee.

2. Stratigraphical position and general nature of the Maryland cycads.

U. S. Geol. Surv., Mon., vol. 48, pp. 411-416, 1905.

3. The buried cypress forests of the upper Chesapeake.

Records of the Past, vol. 4, pp. 47-53, 3 figs., 1905.

Bibbins (Arthur B.), **Clark** (William B.) and.

1. Geology of the Potomac group in the middle Atlantic slope.

See **Clark** (W. B.) and **Bibbins** (A. B.), 1.

Biddle (H. C.).

1. The deposition of copper by solutions of ferrous salts.

Jour. Geol., vol. 9, pp. 430-436, 1901.
Describes certain chemical experiments which show that the conditions under which the oxidation of the ferrous salts may result in the deposition of copper are those which are found in the circulation of underground water.

Bilgram, Hugo.

1. Inclusions in quartz.

Phila. Acad. Nat. Sci., vol. 55, p. 700, 1904.

Billups (A. C.).

1. Fossil land shells of the old forest bed of the Ohio River.

Nautilus, vol. 16, pp. 50-52, 1902.
Describes the occurrence and gives a list of and notes upon the species identified.

Birge (E. A.).

1. Report of the superintendent of the survey.

Wis. Geol. & Nat. Hist. Surv., 1st Bienn. Rept. of the Commissioners, pp. 8-28, 1898.
Chiefly administrative, but contains notes on the geology of Wisconsin.

2. Report of the superintendent of the survey.

Wis. Geol. & Nat. Hist. Surv., 2d Bienn. Rept. of the Commissioners, pp. 7-36, 1901.
Chiefly administrative, but contains notes on the geology of Wisconsin.

3. Report of the superintendent of the survey.

Wis. Geol. & Nat. Hist. Surv., 3d Bienn. Rept. of the Commissioners, pp. 9-27, 1902.
Chiefly administrative, but contains notes on the geology of Wisconsin.

Birge (E. A.)—Continued.

4. Report of the director of the survey.

   Wis. Geol. & Nat. Hist. Surv., 4th Bienn. Rept. of the Commissioners, pp. 9-32, 1 map, 1904.
   Chiefly administrative, but contains notes on the geology of Wisconsin.

Bishop (Irving P.).

1. Oil and gas in southwestern New York.

   N. Y. State Mus., 53d Ann. Rept., vol. 1, pp. r107-r134, 1901.
   Describes occurrence of oil, and gives sections at a number of localities.

2. Economic geology of western New York.

   N. Y. State Mus., 56th Ann. Rept., pp. r42-r74, 2 pls., 1904.
   Gives notes on the occurrence of economic products, particularly building stone, clays, salt, natural gas, and petroleum.

Bishop (S. E.).

1. Brevity of tuff-cone eruptions.

   Am. Geol., vol. 27, pp. 1-5, 1 pl., 1901.
   Discusses the origin and mode of formation of Diamond Head, Island of Oahu.

Blackwelder (Eliot), **Salisbury** (Rollin D.) and.

1. Glaciation in the Bighorn Mountains.

   See **Salisbury** (R. D.) and **Blackwelder** (Eliot), 1.

Blake (John Charles).

1. A mica-andesite of west Sugarloaf Mountain, Boulder County, Colorado.

   Colo. Sci. Soc., Proc., vol. 7, pp. 1-17, 1901.
   Describes occurrence, megascopic and microscopic characters, and composition.

2. Some relations of tetrahedral combinations to crystalline form.

   Colo. Sci. Soc., Proc., vol. 7, pp. 19-21, 4 figs., 1901.

Blake (William P.).

1. Some salient features in the geology of Arizona, with evidences of shallow seas in Paleozoic time.

   Am. Geol., vol. 27, pp. 160-167, 1901.
   Describes the character and occurrence of ancient crystalline Paleozoic and Mesozoic rocks.

2. The evidences of shallow seas in Paleozoic time in southern Arizona.

   Abstract: Jour. Geol., vol. 9, pp. 68-69, 1901; Geol. Soc. Am., Bull., vol. 12, p. 493, 1901.
   Contains notes on probable lower Paleozoic rocks of the region.

3. The caliche of southern Arizona.

   Abstract: Eng. & Mg. Jour., vol. 72, pp. 601-602, 1901.
   Describes the character and origin of the material.

4. The caliche of southern Arizona; an example of deposition by the vadose circulation.

   Am. Inst. Mg. Engrs.,Trans., vol. 31, pp. 220-226, 1902.
   Describes the formation of the caliche, a calcareous formation, and gives its chemical composition and that of well waters.

5. The geology of the Galiuro Mountains, Arizona, and of the gold-bearing ledge known as Gold Mountain.

   Eng. & Mg. Jour., vol. 73, pp. 546-547, 5 figs., 1902.
   Describes the general geology of the region and the occurrence and origin of the gold ores.

6. Lake Quiburis, an ancient Pliocene lake in Arizona.

   Ariz. Univ., Monthly, vol. 4, no. 4, February, 2 pp., 1902. Abstract: Science, new ser., vol. 15, pp. 413-414, 1902.

7. Notes on the mines and minerals of Guanajuato, Mexico.

   Am. Inst. Mg. Engrs., Trans., vol 32, pp. 216-223, 1902.

8. Tombstone and its mines; a report upon the past and present condition of the mines of Tombstone, Cochise County, Arizona, to the Development Company of America.

   New York, 1902. 83 pp., illus.
   Describes the general geology of the region, the character and occurrence of the stratified rocks and geologic structure, and the occurrence of the ore deposits of precious metals, and discusses their origin.

Blake (William P.)—Continued.

9. Arizona diatomite.

Wis. Acad. Sci., Trans., vol. 14, pt. 1, pp. 107-111, 6 pls., 1903.
Gives notes upon and lists of species of diatoms obtained from deposits of diatomaceous earth in the valley of the San Pedro, Arizona.

10. Diatom-earth in Arizona.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 38-45, 1903.
Describes occurrence and character of diatomaceous deposits, and discusses their origin and economic value.

11. Origin of pebble-covered plains in desert regions.

Eng. & Mg. Jour., vol. 75, p. 632, 1903; Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 161-162, 1904.

12. Tombstone and its mines.

Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 668-670, 1904.
Gives observations on the occurrence of ore deposits, and discusses the origin of certain manganiferous ores.

13. Geology of Arizona.

Rept. of the governor of Ariz. to the Secretary of the Interior for the year ended June 30, 1903, pp. 126-135, 1903.
Gives a general outline of the geology of Arizona.

14. Gypsum deposits in Arizona.

U. S. Geol. Surv., Bull. no. 223, pp. 100-101, 1904.
Describes character and occurrence of gypsum deposits in Arizona.

15. Superficial blackening and discoloration of rocks, especially in desert regions.

Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 371-375, 1905.
Describes surficial blackening of rocks and discusses its origin.

16. Copper ore and garnet in association.

Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 886-890, 1904. Mg. & Sci. Press, vol. 89, pp. 72-73, 1904. Mg. World, vol. 21, p. 175, 1904.
Describes occurrences of copper ore and garnet in association, and discusses their origin.

17. Evidences of plication in the rocks of Cananea, Sonora [Arizona].

Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 551-552, 1905. Mg. Rep., vol. 50, pp. 586-587, 1904.

18. Iodobromite in Arizona.

Am. Jour. Sci., 4th ser., vol. 19, p. 230, 1905.
Describes the occurrence, characters, and composition.

19. Origin of orbicular and concretionary structure.

Am. Inst. Mg. Engrs., Bi-mo. Bull., no. 4, pp. 677, 682, 1 pl., 1905.

Blakemore (William).

1. Pioneer work in the Crows Nest coal areas [Canada].

Can. Mg. Rev., vol. 20, pp. 127-132, 3 figs., 1901; Can. Mg. Inst., Jour., vol. 4, pp. 230-243, 3 figs. 1901.
Describes the occurrence of the coal in Cretaceous strata.

2. The iron ore deposits near Kitchener, B. C.

Can. Mg. Inst., Jour., vol. 5, pp. 76-80, 5 pls., 1902. Abstract: Eng. & Mg. Jour., vol. 73, pp. 382-383, 1902.

3. Graham Island coal [British Columbia].

Eng. & Mg. Jour., vol. 78, p. 631, 1904.
Describes the occurrence of workable coal beds.

Blasdale (Walter C.).

1. Contribution to the mineralogy of California.

Univ. of Cal., Dept. of Geol., Bull., vol. 2, pp. 327-348, 1901.
Describes material from the Berkeley Hills, Cal.

Blatchford (John).

1. The Postdam formation of Bald Mountain district [South Dakota].

Mg. & Sci. Press, vol. 87, p. 167, 1903.
Describes the occurrence of the ore *deposits*.

Blatchford (John)—Continued.

2. The Bald Mountain district in the Black Hills. A description of the flat formation and some of the ore bodies found in connection with it.

Mines & Minerals, vol. 24, p. 394, 1904.
Describes the occurrence of gold-ore deposits.

Blatchley (W. S.).

1. Oolite and oolitic stone for Portland-cement manufacture.

Ind. Dept. of Geol. and Nat. Res., 25th Ann. Rept., pp. 322–330, 1901. Abstract: Stone, vol. 22, pp. 532–536, 1901.
Describes the occurrence and characters of the materials in Indiana.

2. The petroleum industry in Indiana in 1900.

Ind. Dept. of Geol. and Nat. Res., 25th Ann. Rept., pp. 481–527, and map, 1901.
Discusses the origin of petroleum oil and contains notes on its occurrence in Indiana.

3. The mineral waters of Indiana: their location, origin, and character.

Ind. Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 11–158, 19 pls., 1903.

4. On the petroleum industry in Indiana in 1901.

Ind. Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 303–331, 1903.

5. Gold and diamonds in Indiana.

Ind. Dept. Geol. & Nat. Res., 27th Ann. Rept., pp. 11–47, 4 pls., 3 figs., 1903.
Describes glacial history in Indiana and discusses the occurrence of gold and diamonds in glacial drift deposits.

6. The petroleum industry in Indiana in 1903.

Ind. Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 79–209, 2 pls., 3 figs., 1904.
Describes the geologic occurrence of petroleum and natural gas, the geologic structure of the oil fields of Indiana, and in detail the production of and exploration for oil by counties.

7. The lime industry in Indiana.

Ind. Dept. Geol. & Nat. Res., 28th Ann. Rept, pp. 211-257, 4 pls., 2 figs., 1904.

8. The clays and clay industries of Indiana.

Ind. Dept. Geol. & Nat. Res., 29th Ann. Rept., pp. 13–657, 1905.
Includes notes on the geologic occurrence and character of clays in Indiana.

Blatchley (W. S.) and **Ashley** (George H.).

1. The lakes of northern Indiana and their associated marl deposits.

Ind. Dept. of Geol. & Nat. Res., 25th Ann. Rept., pp. 31-321, 7 pls., 70 figs., 1901.
Describes the characteristics and origin of these lakes and the occurrence, formation, and uses of the marl beds.

Blatchley (W. S.) and **Sheak** (W. H.).

1. Trenton rock petroleum.

Sci. Am. Suppl., vol. 55, p. 22775, 1903.
Discusses occurrence and origin of petroleum in Trenton rock.

Bleininger (Albert Victor).

1. The manufacture of hydraulic cements.

Ohio Geol. Surv., 4th ser., Bull. no 3, 391 pp., 81 figs., 1904.
Includes a discussion of the occurrence and character of clays and other materials in Ohio suitable for the manufacture of cements.

Boehmer (Max).

1. Some practical suggestions concerning the genesis of ore deposits.

Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 449–453, 1904.

[**Bogdanovič** (Karl Ivanovič)].

1. [Sketch of Nome.]

St. Petersburg, 116 pp., illus., 1901. [Russian.]

Böggild (O. B.).

1. On ilvaite from Siorarsuit at Julianehaab, Greenland.

Meddelelser om Grønland, vol. 25, pp. 43–89, 32 figs., 1902; Copenhagen Univ., Min. and Geol. Mus., Cont. to Min., no. 1, 1902.

Böggild (O. B.)—Continued.

2. On some minerals from the nephelite-syenite at Julianehaab, Greenland (erikite and schizolite).

   Meddelelser om Grönland, vol. 26, pp. 93-139, 19 figs., 1903; Copenhagen Univ., Min. and Geol. Mus., Contr. to Min., no. 2, 1903.

   Describes occurrence, constitution, crystallography, and properties of erikite, a new mineral, and schizolite from Greenland.

3. Samples of the sea-floor along the coast of east Greenland 74½-70 N. L.

   Meddelelser om Grönland, vol. 28, pp. 17-95, 8 pls., 1904; Copenhagen Univ., Min. & Geol. Mus., Contr. to Min., no. 3, 1903.

   Describes the kind and origin of the material deposited on the sea bottom east of Greenland

4. The minerals from the basalt of east Greenland

   Meddelelser om Grönland, vol. 28, pp. 99-129, 11 figs., 1905; Min. and Geol. Mus., Univ., Copenhagen, Contr. to Min., no. 5, 1905.

   Describes occurrence and crystallographic and other characters.

5. Mineralogia Groenlandica.

   Min. & Geol. Mus. of the Univ., Copenhagen, Contr. to Min., no. 6 (Meddelelser om Groenland, vol. 32), xix, 625 pp., 119 figs., 1905.

   Gives a full account of the minerals that have been found in Greenland, including a description of each species. [In Danish.]

Böggild (O. B.) and **Winther** (Chr.).

1. On some minerals from the nephelite-syenite at Julianehaab, Greenland (epistolite, britholite, schizolite, and steenstrupite), collected by G. Flink.

   Meddelelser om Groenland, vol. 24, pp. 181-213, 7 figs., 1901.

Bolton (L. L.).

1. Round Lake to Abitibi River [Ontario].

   Ontario Bur. Mines [12th] Rept., pp. 173-190, 1903.

   Contains observations on the geography, geology, petrology, and resources of the region. traversed.

Boltwood (Bertram B.).

1. On the ultimate disintegration products of the radio-active elements.

   Am. Jour. Sci., 4th ser., vol. 20, pp. 253-267, 1905.

   Includes notes on the occurrence and composition of various minerals in which radio-activity has been discovered.

Bond (Josiah).

1. Copper leaching at the American copper mine.

   N. J. Geol. Surv., Ann. Rept. for 1901, pp. 153-161, 1902.

   Describes experiments made upon copper ores to determine methods of extracting copper.

Bonney (T. G.).

1. On a sodalite syenite (ditroite) from Ice River Valley, Canadian Rocky Mountains.

   Geol. Mag., dec. iv, vol. 9, pp. 199-206, 1902.

   Describes mode of occurrence and gives chemical analysis of this mineral.

2. The Canadian Rockies. Part II: On some rock specimens collected by E. Whymper, esq., F. R. S. E., in the Canadian Rocky Mountains.

   Geol. Mag., dec. iv, vol. 9, pp. 544-550, 1902.

3. Notes on specimens collected by Professor Collie, F. R. S., in the Canadian Rocky Mountains.

   Geol. Mag., new ser., dec. iv, vol. 10, pp. 289-297, 1 pl., 1 fig., 1903.

   Discusses occurrence and character of rock specimens from Canadian localities.

4. Note on rock specimens from the Canadian Rocky Mountains.

   Geog. Jour., vol. 31, pp. 498-499, 1903.

5. March dust from the Soufrière.

   Nature, vol. 67, p. 584, 1903.

   Describes character of volcanic dust from an eruption of the Soufrière of St. Vincent.

Bordeaux (A.).

1. Les anciens chenaux aurifères de Californie.

   Annales des Mines, 10th ser., vol. 2, pp. 217-258, 1902.

   Describes the occurrence, character, and origin of the auriferous gravels of the State.

Borgström (L. H.).

1. The Shelburne meteorite.

   Can., R. Astron. Soc., Selected Papers and Proc., 1904, pp. 69-94, 4 pls., 1905.

Boright (Sherman H.)

1. Notes on the geology of the northern portion of the Boisdale Hills anticline [Cape Breton Island].

   Can. Mg. Inst., Jour., vol. 6, pp. 411-434, illus., 1904.

   Describes the location, geographic and topographic features, the general geology, and the character and occurrence of igneous rocks, and Cambrian and Carboniferous strata and economic resources of the region.

Böse (Emilio).

1. Sobre la independencia de los volcanes de grietas preexistentes.

   Soc. Cient. Ant. Alz., Mem., vol. 14, pp. 199-231, 3 figs., 1900.

   Discusses origin of volcanoes.

2. Ein Profil durch den Ostabfall der Sierra Madre Oriental von Mexico.

   Zeit. deut. geol. Gesell., Band 53, heft 2, pp. 173-210, 8 figs., 1901.

   Describes the character of the igneous and sedimentary rocks and the geologic structure of the region.

3. Breve noticia sobre el estado actual de volcan de Tacaná (Chiapas) [Mexico].

   Soc. Cient. Ant. Alz., Mem. y Rev., vol. 18, pp. 267-270, 1 pl., 1902.

   Describes the present condition of this volcano.

4. Sobre las regiones de temblores México.

   Soc. Cient. Ant. Alz., Mem. y Rev., t. 18, pp. 159-184, 1902.

   Discusses regions in Mexico subject to earthquake movements.

5. Informe sobre el origen probable de los temblores de Zanatepec á fines de septiembre de 1902, y sobre el estado actual del volcán de Tacaná.

   México, Secretaría de Fomento, 2ª ép., año 3, no. 5, IV, pp. 59-79, 1903. México, Inst. Geol., Par., t. 1, pp. 5-25, 4 pls., 1903.

   Discusses the probable origin of the earthquakes of Zanatepec of September, 1902, and the present condition of the volcano of Tacaná.

6. El área cubierta por la ceniza del volcán de Santa María, octubre 1902.

   México, Secretaría de Fomento, Bol., 2ª ép., año 4, IV, pp. 73-78, 1904. México, Inst. Geol., Par., t. 1, pp. 51-54, 1 pl., 1904.

   Describes the area covered by ashes ejected by the volcano of Santa Maria in October, 1902.

7. Reseña acerca de la geología de Chiapas y Tabasco.

   Méx. Inst. Geol., Bol. no. 20, pp. 5-100, 9 pls., 1905.

   Describes the geography and drainage, and the character, occurrence, and relations of Archean, Paleozoic, Mesozoic, and Cenozoic deposits, and of igneous rocks, and the geologic structure of the region.

Böse (Emilio) and **Angermann** (E.).

1. Informe sobre el temblor del 16 de enero de 1902 en el Estado de Guerrero [México].

   México, Inst. Geol., Par., t. 1, pp. 125-131, 1904. México, Secretaría de Fomento (seg. época), año 4, num. 11, IV, pp. 223-229, 1905.

   Describes an earthquake occurring in January, 1902, in Guerrero, Mexico.

Böse (Emilio), **Villarello** (Juan de D.) and.

1. Criaderos de fierro de la hacienda de Vaquerias, en el estado de Hidalgo.

   See Villarello (J. de D.) and Böse (E.), 1.

Boston Society of Natural History.

1. Memorial of Professor Alpheus Hyatt.

   Boston Soc. Nat. Hist., Proc., vol. 30, pp. 413-453, 1902.

   Contains remarks of various members at a meeting of the Society, February 5, 1902.

Boutwell (John Mason).

1. **Progress report on the Park City mining district, Utah.**

U. S. Geol. Surv., Bull. no. 213, pp. 31-40, 1903.

Contains a general account of the geology and ore deposits of the region.

2. **Ore deposits of Bingham, Utah.**

U. S. Geol. Surv., Bull. no. 213, pp. 105-122, 1903.

Describes the history of mining developments at this locality, the character and occurrence of sedimentary and igneous rocks, the geologic structure, and the occurrence and character of the ore deposits.

3. **Gypsum deposits in Utah.**

U. S. Geol. Surv., Bull. no. 223, pp. 102-110, 1 pl., 1904.

Describes character, occurrence, economic development, and geologic relations of gypsum deposits in Utah.

4. **Progress report on the Park City mining district, Utah.**

U. S. Geol. Surv., Bull. no. 225, pp. 141-150, 1904.

Describes the character and occurrence of sedimentary, igneous, and metamorphic rocks in this area, the geologic structure, and the occurrence and mining of silver-lead ores.

5. **Iron ores in the Uinta Mountains, Utah.**

U. S. Geol. Surv., Bull. no. 225, pp. 221-228, 1904.

Describes the general geologic structure and stratigraphy of the region, and the occurrence and character of the iron-ore deposits.

6. **Rock gypsum at Nephi, Utah.**

U.S. Geol. Surv., Bull. no. 225, pp. 483-487, 1904.

Describes the character, occurrence, and development of rock gypsum near Nephi, Utah.

7. **Notes on the wells, springs, and general water resources of New Hampshire.**

U.S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 56-72, 1904.

8. **Progress report on Park City mining district, Utah.**

U. S. Geol. Surv., Bull. no. 260, pp. 150-153, 1905.

Describes the progress of the mining operations in this district and the occurrence of the ore bodies, producing chiefly gold and silver.

9. **Vanadium and uranium in southeastern Utah.**

U. S. Geol. Surv., Bull. no. 260, pp. 200-210, 1 fig., 1905.

Describes the occurrence, geologic relations, and character of ore deposits yielding vanadium and uranium.

10. **Ore deposits of Bingham, Utah.**

U. S. Geol. Surv., Bull. no. 260, pp. 236-241, 1905.

Describes the character, occurrence, and origin of the ores, of which copper is the principal one, and recent mining developments.

11. **Oil and asphalt prospects in Salt Lake basin, Utah.**

U. S. Geol. Surv., Bull. no. 260, pp. 468-479, 1 fig., 1905.

Describes the general geography and geology, the prospecting for oil, and the occurrence and character of asphalt.

12. **Economic geology of the Bingham mining district, Utah. Part II. Economic geology.**

U. S. Geol. Surv., Professional Paper no. 38, pp. 71-385, 34 pls., 10 figs., 1905.

Describes the history and development of the district, the character, occurrence, and genesis of the ores, chiefly gold, silver, and copper, and in detail the mines and mining operations.

13. **Ore deposits of Bingham, Utah.**

Eng. & Mg. Jour., vol. 79, pp. 1176-1178, 3 figs., 1905.

14. **Genesis of the ore-deposits at Bingham, Utah.**

Am. Inst. Mg. Engrs., Bi-Mo. Bull., no. 6, pp. 1153-1192, 13 figs., 1905. Abstract: Science, new ser., vol. 21, p. 662, 1905.

Describes the general geology and the character and occurrence of the copper and lead ores and discusses their origin.

Bowman (H. L.).

1. **On an occurrence of minerals at Haddam Neck, Connecticut, U. S. A.**

Min. Mag., vol. 13, pp. 97-121, 1 pl., 5 figs., 1902.

Bowman (Isaiah).

1. A typical case of stream capture in Michigan.

   Jour. Geol., vol. 12, pp. 326-334, 4 figs., 1904.

2. Deflection of the Mississippi.

   Science, new ser., vol. 20, pp. 273-277, 3 figs., 1904.
   Describes changes in the channel of the Mississippi and discusses their cause.

3. Pre-Pleistocene deposits at Third Cliff, Massachusetts.

   Science, new ser., vol. 21, pp. 993-994, 1905.

Bownocker (John Adams).

1. History of the Little Miami River [Ohio].

   Ohio State Acad. Sci., Special Papers, no. 3, pp. 32-45, 2 figs., map, 1900.
   Discusses drainage changes in the valley of the Little Miami River.

2. The Corning oil and gas field [Ohio].

   O. S. U. Nat., vol. 1, pp. 49-59, 1901.

3. The oil and gas producing rocks of Ohio.

   Jour. Geol., vol. 10, pp. 822-838, 1902; Univ. Bull., ser. 7, no. 3 (Geol. ser., no. 4), 1902.
   Describes the character and stratigraphic relations of these rocks and the occurrence of oil and gas.

4. The central Ohio natural gas fields.

   Am. Geol., vol. 31, pp. 218-231, pl. 14, 1903; Ohio St. Univ. Bull., ser. 7, no. 13 (Geol. Ser. no. 5), 1903.
   Describes location and area, history and development, geological structure of the natural gas fields and sections of the wells bored, and the production and composition of the gas.

5. The occurrence and exploitation of petroleum and natural gas in Ohio.

   Ohio Geol. Surv., 4th ser., Bull. no. 1, pp. 9-320, 6 pls., and 9 maps, 1903.
   Gives a detailed account of the oil and gas producing horizons of Ohio rocks, records of borings, history, development, and production of the various fields, including the stratigraphy and geologic structure.

6. The salt deposits of northeastern Ohio.

   Am. Geol., vol. 35, pp. 370-376, 1 pl., 1905.
   Includes records of deep wells, and discusses the occurrence of beds of rock salt as revealed by deep borings.

Bowron (William M.).

1. The origin of Clinton red fossil-ore in Lookout Mountain, Alabama.

   Am. Inst. Mg. Engrs., Bi-Mo. Bull., no. 6, pp. 1245-1262, 3 figs., 1905.

Boyer (C. S.).

1. Systematic paleontology of the Miocene deposits of Maryland: Thallophyta-Diatomaceæ.

   Md. Geol. Surv., Miocene, pp. 487-507, 3 pls., 1904.

Braden (William).

1. Certain conditions in veins and faults in Butte, Montana.

   Can. Mg. Review, vol. 21, pp. 149-152, 8 figs. in text, 1902; Can. Mg. Inst., Jour., vol. 5, pp. 296-308, 8 figs., 1902.
   Describes geological structure and ore deposition in this area.

Bradford (William).

1. Gold deposition by drainage.

   Eng. and Mg. Jour., vol. 78, pp. 554-555, 8 figs., 1904.
   Discusses the origin of gold ores.

Brady (Frank W.).

1. The white sands of New Mexico. A description of a remarkable formation of nearly pure gypsum sand.

   Mines and Minerals, vol. 25, pp. 529-530, 4 figs., 1905.

Branner (John C.).

1. Origin of ripple marks.

Jour. Geol., vol. 9, pp. 535-536, 1901.

Suggests that the origin of large ripple marks may be found in the seaward extension of beach cusps.

2. The zinc and lead deposits of north Arkansas.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 572-603, 33 figs. [maps, sections, etc.], 1902.

Describes occurrence, mode of formation, and relations of bedded ores to the geologic structure of the region, and gives analyses of some of the ores.

3. [In discussion of paper by Eric Hedburg on "The Missouri and Arkansas zinc mines."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 1013-1014, 1902.

4. Syllabus of a course of lectures on elementary geology. Ed. 2.

369 pp., 25 pls., 109 figs., 1902.

5. A topographic feature of the hanging valleys of the Yosemite [California].

Jour. Geol., vol. 11, pp. 547-553, 5 figs., 1903.

Gives an explanation for the position of the falls.

6. Notes on the geology of the Hawaiian Islands.

Am. Jour. Sci., 4th ser., vol. 16, pp. 301-316, 1 pl., 13 figs., 1903

Describes topographic features and discusses their origin.

7. Memoir of James E. Mills.

Geol. Soc. Am., Bull., vol. 14, pp. 512-517, 1 pl. (por.), 1904.

Includes a list of papers written by the subject of the memoir.

8. Natural mounds or hog-wallows.

Science, new ser., vol. 21, pp. 514-517, 1905.

Discusses the occurrence, character, and origin of these mounds.

9. The university training of engineers in economic geology.

Econ. Geol., vol. 1, pp. 289-294, 1905.

Branner (John C.) and **Newsom** (John F.).

1. The phosphate rocks of Arkansas.

Ark. Agr. Exp. Sta., Bull. no. 74, 123 pp., 23 figs., 1902.

Describes the character and geographic and geologic occurrence of phosphate rock in Arkansas.

Branson (E. B.).

1. Notes on some Carboniferous cochliodonts with descriptions of seven new species.

Jour. Geol., vol. 13, pp. 20-34, 2 pls. 1905.

2. Structure and relationships of American Labyrinthodontidæ.

Jour. Geol., vol. 13, pp. 568-610, 24 figs., 1905.

Brauns (R.).

1. Asche des Vulkans Sta. Maria in Guatemala.

Centralbl. f. Min., pp. 132-134, 1903.

Describes the composition of ashes ejected by St. Maria in Guatemala.

2. Ueber die Asche des Vulkans Sta. Maria in Guatemala.

Centralbl. f. Min., p. 290, 1903.

Discusses differences and their explanation in composition of volcanic ashes from St. Maria in Guatemala found by several investigators.

Breed (Robert S.).

1. "The Sunset trachyte," from near Sunset, Boulder County, Colorado.

Colo. Sci. Soc., Proc., vol. 7, pp. 216-230 [1902].

Describes the occurrence, the megascopic and microscopic characters, and the composition.

Breese (Fred J.).

1. The valley of the lower Tippecanoe River [Indiana].

Ind. Acad. Sci., Proc. for 1901, pp. 215-216, 1 fig., 1902.

Breeze (Fred J.)—Continued.

2. Some topographic features in the lower Tippecanoe Valley [Indiana].

Ind. Acad. Sci., Proc., 1902, pp. 198-200, 1 fig., 1903.
Describes some physiographic features of the region.

Breger (C. L.), **Kindle** (Edward M.) and.

1. Paleontology of the Niagara of northern Indiana.

See **Kindle** (Edward M.) and **Breger** (C. L.), 1.

Brent (Charles).

1. Notes on the gold ores of western Ontario.

Can. Mg. Rev., vol. 22, pp. 33-35. 1903. Can. Mg. Inst., Jour., vol. 6, pp. 327-335, 1904.
Gives notes on the geology of the region and the occurrence of gold ores.

Brewer (William H.).

1. John Wesley Powell.

Am. Jour. Sci., 4th ser., vol. 14, pp. 377-382, 1902.
Gives a sketch of Major Powell's life and work.

Brewer (William M.).

1. Texada Island, British Columbia.

Eng. & Mg. Jour., vol. 72, pp. 665-667, 2 figs., 1901.
Contains notes on the geology and ore bodies.

2. British Columbia iron and coal. A description of the various known deposits, their locations, qualities, and the extent of development.

Mines & Minerals, vol. 23, pp. 1-4, 1902.

3. Mining industry and mineral resources of British Columbia.

Eng. Mag., vol. 23, pp. 831-846, 15 figs., 1902; vol. 24, pp. 64-74, 1 fig., 1902.

4. White Horse mining district, Yukon Territory.

Eng. & Mg. Jour., vol. 73, pp. 167-168, 2 figs., 1902.
Describes the general geology of the region and the occurrence of copper and coal.

5. M'Kee Creek, Atlin mining division, British Columbia.

Eng. & Mg. Jour., vol. 73, pp. 242-243, 1902.
Describes the placers of the region.

6. British Columbia coal fields.

Eng. & Mg. Jour.. vol. 73, pp. 408-410, 1902.
Describes the occurrence of coal in Vancouver Island.

7. The Crow's Nest Pass coal fields [Canada].

Eng. and Mg. Jour., vol. 73, pp. 549-552, 2 figs., 1902.
Describes the geology of the region and the occurrence of coal.

8. British Columbia, Boundary mining district, progress in mining and smelting.

Eng. & Mg. Jour., vol. 73, pp. 617-623, 4 figs., 1902.
Describes the general geology and the occurrence of the gold, silver, and copper ores.

9. Alberta Territory, Canada. Coal fields of Crow's Nest Pass Branch of the Canadian Pacific Railway.

Eng. & Mg. Jour., vol. 73, pp. 757-758, 1902.
Describes the geology and the development of the coal industry.

10. The rock-slide at Frank, Alberta Territory, Canada.

Inst. Mg. Engrs., Trans., vol. 26, pp. 34-39, 2 figs., 1903; N. of England Inst. Mg. & Mech. Engrs., vol. 54, pp. 34-39, 2 figs., 1903.
Describes the landslide which occurred at Frank, in Alberta Territory, on April 29, 1903.

11. White Horse district, in Yukon Territory—history, geology, present conditions, and future prospects of the mining district.

Mines & Minerals, vol. 24, pp. 28-31, 1903.
Describes the geology of the region and the occurrence of copper ore and coal deposits.

12. Mineral resources of southeastern Alaska.

Mg. & Sci. Press, vol. 86, p. 315, 1903.
Gives observations upon the geology and occurrences of ore deposits.

Brewer (William M.)—Continued.

13. Mount Sicker mining district, British Columbia.

Mg. & Sci. Press, vol. 87, pp. 7-8, 2 figs., 1903.
Gives observations on the geology of the district and the occurrence of the copper ores.

14. Mineral resources of Vancouver Island.

Can. Mg. Inst., Jour., vol. 6, pp, 188-199, 1904.
Describes the general geology and the occurrence and character of ore bodies, mainly gold, copper-gold, and magnetite.

15. White Horse copper camp, Yukon Territory.

Mg. & Sci. Press, vol. 89, pp. 308-309, 1 fig., 1904.
Describes the location, general geology, and occurrence of the copper ores.

16. Bornite ores of British Columbia and the Yukon Territory.

Can. Mg. Rev., vol. 24, pp. 76-78, 1905; Can. Mg. Inst., Jour., vol. 8, pp. 172-182, 1905.
Discusses the occurrence, geologic relations, and origin of the bornite ores carrying gold, silver, and copper.

Brezina (Aristides).

1. The arrangement of collections of meteorites.

Am. Phil. Soc., Proc., vol. 43, pp. 211-247, 7 pls., 1904.

Brezina (Aristides) and **Cohen** (Emil).

1. Ueber Meteoreisen von De Sotoville [Alabama].

K. Akad. d. Wiss. in Wien, math.-naturw. Klasse, Sitz.-ber., Bd. 113, Abt. 1, pp. 89-108, 3 figs., 1904.
Describes occurrence, characters, and composition.

Bridge (Norman).

1. Edward Claypole, the man.

Am. Geol., vol. 29, pp. 30-40, 1902.

2. Address at the presentation of the memorial bronze of Edward Waller Claypole.

Throop Polytechnic Institute, Pasadena, Cal., June 2, 1902. (Not seen.)

Bridgford (John).

1. Analysis of volcanic dust from La Soufrière.

Chemical News, vol. 87, pp. 233-234, 1903.

Brigham (Albert Perry).

1. A text-book of geology. New York, D. Appleton and Company. 477 pp., 294 figs., 1902.

2. Students' laboratory manual of physical geography.

New York, D. Appleton and Company, 1905. 153 pp., 17 figs.

3. Early interpretations of the physiography of New York State.

Abstract: Science, new ser., vol. 21, p. 136, 1905.

Broadhead (G. C.).

1. Geological surveys [of Missouri].

Encyclopedia of the History of Missouri, New York, The Southern History Company, vol. 3, pp. 27-31, 1901.
Gives an historical account of the geological surveys of the State of Missouri and their official publications.

2. Mineralogy [of Missouri].

Encyclopedia of the History of Missouri, New York, The Southern History Company, vol. 4, pp. 390-393, 1901.
Gives a general account of the minerals and mineral products of Missouri.

3. The New Madrid earthquake.

Am. Geol., vol. 30, pp. 76-87, 1902.
Gives an account of earthquake shocks in the Mississippi Valley in 1811 and 1812.

4. Bituminous and asphalt rocks of the United States.

Am. Geol., vol. 32, pp. 59-60, 1903.

Broadhead (G. C.)—Continued.

5. Bitumen and oil rocks.

Am. Geol., vol. 33, pp. 27-35, 1904.

A general account of the occurrence of bituminous rocks and the origin and utilization of bituminous products.

6. The loess.

Am. Geol., vol. 33, pp. 393-394, 1904.

Describes distribution and character of the loess along the Missouri River and discusses its origin.

7. Surface deposits of western Missouri and Kansas.

Am. Geol., vol. 34, pp. 66-67, 1904.

Describes the distribution of flint gravels in Missouri and Kansas.

8. The saccharoidal sandstone.

Am. Geol., vol. 34, pp. 105-110, 1904.

Describes the occurrence and character of the saccharoidal sandstone in Missouri.

Brock (R. W.).

1. The Boundary Creek district, British Columbia.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 49-67, 1902.

Describes the author's observations in this region.

2. The ore deposits of the Boundary Creek district, British Columbia.

Can. Mg. Inst., Jour., vol. 5, pp. 365-378, 1902; Can. Mg. Rev., vol. 21, pp. 156-160, 1902.

Describes the rocks of this area and the occurrence of ore bodies.

3. Preliminary report on the Boundary Creek district, British Columbia.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 90-136, 1903.

Describes physiographic features, general geology, character, occurrence, and origin of igneous rocks, the occurrence and origin of the copper, gold, and silver ore deposits, and the mining operations.

4. Original native gold in igneous rocks.

Eng. & Mg. Jour., vol. 77, p. 511, 1904.

Describes occurrences of native gold in igneous rocks of British Columbia.

5. Poplar Creek and other camps of the Lardeau district [British Columbia].

Can. Mg. Inst., Jour., vol. 7, pp. 87-113, 10 figs., 1904.

Gives a general account of the geology of the district and the gold-ore deposits.

6. Platinum in British Columbia.

Eng. & Mg. Jour., vol. 77, pp. 280-281, 1904.

Describes the occurrence, character, and geological relations of ore deposits of British Columbia in which platinum occurs.

7. The Lardeau district, British Columbia.

Can. Geol. Surv., Summ. Rept. for 1903, pp. 42-81, 1 map, 1 fig., 1904.

Describes the physiography, the Glacial and general geology, the geologic structure, the occurrence, character, and relations of stratified and eruptive rocks, and the occurrence and mining of gold deposits.

8. The Lardeau mining district [British Columbia].

Can. Geol. Surv., Summ. Rept. for 1904, pp. 80-91, 1905.

Contains observations on the physiography, general geology, and occurrence of minerals of economic value.

Brock (R. W.), **McConnell** (R. G.) and.

1. Report on the great landslide at Frank, Alberta.

See **McConnell** (R. G.) and **Brock** (R. W.), 1.

Broili (Ferdinand).

1. Ein Beitrag zur Kenntniss von Diplocaulus Cope.

Centralbl. f. Min., etc., pp. 536-541, 4 figs., 1902.

2. Permische Stegocephalen und Reptilien aus Texas.

Palæontographica, vol. 51, pp. 1-120, 13 pls., 5 figs., 1904.

Gives systematic descriptions and discusses the relationships and classification of Stegocephala and reptiles from the Permian of Texas.

Broili (Ferdinand)—Continued.

3. Ueber Diacranodus texensis Cope (Didymodus? compressus Cope).

N. Jahrb. f. Min., Beilage-Band 19, pp. 467–484, 2 pls., 1904.

4. Pelycosaurierreste von Texas.

Deutsch. geol. Ges., Zeitschr., Bd. 56, pp. 268–274, 1 pl. and 1 fig., 1904.
Describes remains of Pelycosaurians from the Permian of Texas.

Brooks (Alfred Hulse).

1. A new occurrence of cassiterite in Alaska.

Science, new ser., vol. 13, p. 593, 1901.
Gives a brief description of occurrence in stream gravels.

2. An occurrence of stream tin in the York region, Alaska.

U. S. Geol. Surv., Min. Res. of U. S. for 1900, pp. 267–271, 1901.
Describes the general geology of the region and the occurrence of the stream tin.

3. The coal resources of Alaska.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 515–571, 1 pl., 1902.
Gives a general account of the Cretaceous and Tertiary geology of Alaska and discusses the character and occurrence of coals in these formations.

4. Preliminary report on the Ketchikan mining district, Alaska, with an introductory sketch of the geology of southeastern Alaska.

U. S. Geol. Surv., Professional Paper no. 1, 120 pp., 2 pls., 6 figs., 1902.
Describes the physiographic and stratigraphic features of the region and the occurrence of gold and copper.

5. Geological reconnaissances in southeastern Alaska.

Geol. Soc. Am., Bull., vol. 13, pp. 253–266, 1 fig., 1902.
Discusses the general stratigraphic relations, geologic history, and correlation of the beds of the region.

6. A reconnaissance in the Mt. McKinley region, Alaska.

Abstract: Science, new ser., vol. 16, pp. 985–986, 1902.

7. Placer gold mining in Alaska in 1902.

U. S. Geol. Surv., Bull. no. 213, pp. 41–48, 1903.
Describes the occurrence of placer gold in different parts of Alaska.

8. Stream tin in Alaska.

U. S. Geol. Surv., Bull. no. 213, pp. 92–93, 1903.

9. Placer mining in Alaska in 1903.

U. S. Geol. Surv., Bull. no. 225, pp. 43–59, 1904.
Describes occurrence of gold and the mining developments.

10. The geography of Alaska, with an outline of the geomorphology.

Intern. Geog. Cong., Eighth, Rept., pp. 204–230, 1 map, 1905.
Describes the geography, physiographic features, and the geologic history.

11. Report on progress of investigations of mineral resources of Alaska in 1904. Administrative report.

U. S. Geol. Surv., Bull. no. 259, pp. 13–17, 1 pl., 1905.
Reviews the Alaskan work of the U. S. Geological Survey during 1904.

12. Placer mining in Alaska in 1904.

U. S. Geol. Surv., Bull. no. 259, pp. 18–31, 1905.

13. The investigation of Alaska's mineral wealth.

Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 376–396, 1905.

14. The outlook for coal mining in Alaska.

Am. Inst. Mg. Engrs., Bi-mo. Bull., no. 4, pp. 683–702, 1 fig., 1905.

Brooks (Alfred Hulse) and **Collier** (Arthur J.).

1. Glacial phenomena of the Seward Peninsula [Alaska].

Abstract: Science, new ser., vol. 13, pp. 188–189, 1901. Abstract of paper read before the Geological Society of Washington.

Brooks (Alfred Hulse), assisted by **Richardson** (George B.) and **Collier** (Arthur J.).

1. A reconnaissance of the Cape Nome and adjacent gold fields of Seward Peninsula, Alaska, in 1900.

U. S. Geol Surv. Reconnaissances in the Cape Nome and Norton Bay regions, Alaska, in 1900, 184 pp., 27 pls., 3 figs., 1901.

Describes the physiography and the surficial, general, and economic geology of the region, and includes detailed descriptions of the various placers.

Brooks (Alfred Hulse), **Schrader** (F. C.) and.

1. Some notes on the Nome gold region of Alaska.

See **Schrader** (F. C.) and **Brooks** (A. H.), 1.

Brower (Jacob V.).

1. Kakabikansing [Little Falls, Minnesota].

Memoirs of Explorations in the Basin of the Mississippi, vol. 5, Kakabikansing. St. Paul, Minn., 126 pp., 30 pls., 1902.

Contains observations on the geology in the vicinity of Little Falls, Minn.

Brown (Arthur Erwin).

1. On some points in the phylogeny of the primates.

Phil. Acad. Nat. Sci., Proc. for 1901, pp. 119–125, 1901.

Brown (Barnum).

1. A new genus of ground sloth from the Pleistocene of Nebraska.

Am. Mus. Nat. Hist., Bull., vol. 19, pp. 569–583, 2 pls., 1903.

2. Stomach stones and food of plesiosaurs.

Science, new ser., vol. 20, pp. 184–185, 1904.

Gives observations upon the occurrence of "stomach stones" in connection with the remains of plesiosaurs and their probable use by the animal.

3. Recent exploration of a Pleistocene fissure in northern Arkansas.

Abstract: Science, new ser., vol. 21, p. 300, 1905.

Discusses the occurrence of vertebrate fossils.

Brown (Lucius P.).

1. The phosphate deposits of the Southern States.

Eng. Assoc. South, Trans., 1904, vol. 15, pp. 53–128, 4 pls., [1905].

Describes the occurrence and geologic relations of phosphate deposits in various States of the South and the character and composition of the phosphates.

Brown (Robert Marshall).

1. The clays of the Boston Basin.

Am. Jour. Sci., 4th ser., vol. 14, pp. 445–450, 4 figs., 1902.

Discusses the correlation of the clays of the region.

2. Gaspee Point [Rhode Island]: a type of cuspate foreland.

Jour. Geog., vol. 1, pp. 343–352, 3 figs., 1902.

Describes the formation and gives a catalogue of cuspate forelands.

3. The Mississippi River from Cape Girardeau to the head of the passes.

Am. Geog. Soc., Bull., vol. 34, pp. 371–383, 8 figs., 1902; vol. 35, pp. 8–16, 1903.

Contains notes on the physiography of the region.

4. Cirques: a review.

Am. Geog. Soc., Bull., vol. 37, pp. 86–91, 1905.

Brown (S. S.).

1. A bibliography of works upon the geology and natural resources of West Virginia, from 1764 to 1901.

W. Va. Geol. Surv., Bull. no. 1, 85 pp., 1901.

Brown (Thomas C.).

1. A new lower Tertiary fauna from Chappaquiddick Island, Martha's Vineyard.

Am. Jour. Sci., 4th ser., vol. 20, pp. 229–238, 1 pl., 1905.

Brumell (H P. H.).

1. Canadian graphite.

Eng. & Mg. Jour., vol. 75, p. 485, 1903.

Describes character and occurrence of graphite deposits in Canada.

Bruncken (Ernest).

1. Physiographical field notes in the town of Wauwatosa [Wisconsin].

Wis. Nat. Hist. Soc., Bull., new ser., vol. 1, pp. 95-99, 1900.

Describes glacial and lacustrine deposits and discusses the origin of a natural exposure of Niagara limestone.

Brunton (D. W.).

1. Geological mine maps and sections.

Am. Inst. Mg. Engrs., Bi-Mo. Bull., no. 5, pp. 1027-1031, 14 figs., 1905. Mg. Rep., vol. 52, pp. 363-365, 3 figs., 1905. Eng. & Mg. Jour., vol. 80, p. 337, 1905.

Brush (George J.).

1. On sussexite, a new borate from Mine Hill, Franklin Furnace, Sussex County, New Jersey.

Yale Bicentennial publications, Cont. to Mineral. and Petrog., pp. 33-36, 1901. (From Am. Jour. Sci., vol. 46, pp. 240-243, 1868.)

2. On hortonolite, the chrysolite group.

Yale Bicentennial publications, Cont. to Mineral. and Petrog., pp. 37-41, 1901. (From Am. Jour. Sci., vol. 48, pp. 17-23, 1869.)

3. On gahnite from Mine Hill, Franklin Furnace, New Jersey.

Yale Bicentennial publications, Cont. to Mineral. and Petrog., pp. 42-44, 1901. (From Am. Jour. Sci., vol. 1, pp. 28-29, 1871.)

4. On the chemical composition of durangite.

Yale Bicentennial publications, Cont. to Mineral. and Petrog., pp. 45-47, 1901. (From Am. Jour. Sci., vol. 11, pp. 464-465, 1876.)

Brush (George J.) and **Dana** (Edward S.).

1. On a new and remarkable mineral locality at Branchville, in Fairfax County, Connecticut; with a description of several new species occurring there. First paper.

Yale Bicentennial publications, Cont. to Mineral. and Petrog., pp. 48-71, 1901. (From Am. Jour. Sci., vol. 16, pp. 33-46, 1878.)

2. Second Branchville paper.

Yale Bicentennial publications, Cont. to Mineral. and Petrog., pp. 72-80, 1901. (From Am. Jour. Sci., vol. 17, pp. 359-380, 1879.)

3. Third Branchville paper.

Yale Bicentennial publications, Cont. to Mineral. and Petrog., pp. 81-85, 1901. (From Am. Jour. Sci., vol. 18, pp. 45-50, 1879.)

4. Fourth Branchville paper—Spodumene and the results of its alteration.

Yale Bicentennial publications, Cont. to Mineral. and Petrog., pp. 86-104, 1901. (From Am. Jour. Sci., vol. 20, pp. 257-284, 1880.)

5. Fifth Branchville paper, with analyses of several manganesian phosphates by Horace L. Wells.

Yale Bicentennial publications, Cont. to Mineral. and Petrog., pp. 105-120, 1901. (From Am. Jour. Sci., vol. 20, pp. 201-216, 1880.)

Bryan (William Alanson).

1. A monograph of Marcus Island.

Bishop Mus., Honolulu, Occasional Papers, vol. 2, no. 1, pp. 77-139, 8 figs., 1904.

Includes an account of the physical features, and the general geology and mode of formation of the island.

Buchan (J. S.).

1. Was Mount Royal an active volcano?

Can. Rec. Sci., vol. 8, pp. 321-328, 1901. Abstract: Am. Geol., vol. 27, p. 313, 1901.
Discusses the geologic history of Mount Royal.

2. Some notes on Mount Royal [Quebec].

Can. Rec. Sci., vol. 8, pp. 517-525, 4 figs., 1902.
Describes the general physiography and geology of the region.

3. The Pleistocene of Montreal and the Ottawa Valley from a railway carriage.

Can. Rec. Sci., vol. 9, pp. 190-195, 1905.

Buckley (Ernest Robertson).

1. The clays and clay industries of Wisconsin.

Wis. Geol. & Nat. Hist. Surv., Bull. no. 7, pt. 1, 304 pp., 55 pls., 1901.
Describes the composition, classification, and properties of clays and the occurrence and distribution of clay deposits in Wisconsin. Includes map of the State, showing the distribution of the various clay beds.

2. Ice ramparts.

Wis. Acad. Sci. Arts and Letters, Trans., vol. 13, pt. 1, pp. 141-157, 13 pls., 1901.
Describes the expansion and contraction of ice and their resulting deformations.

3. Highway construction in Wisconsin.

Wis. Geol. & Nat. Hist. Surv., Bull. no. 10, xvi, 339 pp., 106 pls., 1903.
Discusses occurrence and character of road-making materials.

4. Biennial report of the State geologist [of Missouri].

Mo. Bur. Geol. & Mines, 83 pp., 8 pls., 1903.
Administrative report for the year 1902. Includes an outline of the mineral resources of the State and an index to the publications of the Missouri Geological Survey.

5. Introduction [to the Geology of Miller County, Missouri].

Mo. Bur. Geol. & Mines, 2d ser., vol. 1, pp. xi-xvi, 1903.
Discusses the stratigraphy, correlation, etc., of geologic formations in Miller County, Missouri

6. A system of keeping the records of a State geological survey.

Abstract: Science, new ser., vol. 19, p. 527, 1904.

7. Biennial report of the State geologist, transmitted by the Board of Managers of the Bureau of geology and mines to the Forty-third General Assembly [Missouri].

Jefferson City, Mo., Tribune Printing Company [1905]. 56 pp.
An administrative report. Includes notes on the occurrence of various mineral resources.

8. Introduction to the Geology of Moniteau County [Missouri].

Mo. Bur. Geol. & Mines, 2d ser., vol. 3, pp. 1-9, 1905.
Gives notes upon the occurrence of Paleozoic formations in Missouri, and discusses their nomenclature.

Buckley (E. R.) and **Buehler** (H. A.).

1. The quarrying industry of Missouri.

Mo. Bur. Geol. & Mines, 2d ser., vol. 2, 371 pp., 59 pls., 1904.
Gives an account of investigations upon the occurrence, geologic relations, qualities, and utilization of the building stones of Missouri. Includes a brief geological history of Missouri.

Buckley (E. R.), **Ball** (S. H.), and **Smith** (A. F.).

1. Glacial bowlders along the Osage River in Missouri.

Abstract: Geol. Soc. Am., Bull., vol. 14, p. 553, 1904.

Buckman (S. S.), **Schuchert** (C.) and.

1. The nomenclature of types in natural history.

See **Schuchert** (C.) and **Buckman** (S. S.), 1.

Buehler (H. A.), **Buckley** (E. R.) and.

1. The quarrying industry of Missouri.

See **Buckley** (E. R.) and **Buehler** (H. A.), 1,

Buffet (Edward P.).

1. Some glacial conditions and recent changes on Long Island [New York].

Jour. Geog., vol. 2, pp. 95-101, 6 figs., 1903.

Describes physiographic features and the occurrence of drift bowlders.

Burchard (Ernest F.).

1. Lignites of the middle and upper Missouri Valley.

U. S. Geol. Surv., Bull. no. 225, pp. 276-288, 1904.

Describes prospecting for coal in northeastern Nebraska, the character and occurrence of lignite seams and the character of the lignite; also the occurrence and character of the lignite of North Dakota.

2. Geology of Dakota County, Nebraska, with special reference to the lignite deposits.

Sioux City Acad. Sci. and Letters, vol. 1, pp. 135-184, 8 figs., 1904.

Describes the physiography and drainage features, the character and occurrence of Cretaceous and Quarternary deposits, the geologic history, the economic resources, and the occurrence and character of lignite not of workable quality.

3. Iron ores in the Brookwood quadrangle, Alabama.

U. S. Geol. Surv., Bull. no. 260, pp. 321-334, 1905.

Describes the development of the iron industry of Alabama, the distribution of the ore-bearing formations in the Brookwood quadrangle, and the character, occurrence, and relationships of the iron ores.

Burckhardt (Carlos).

1. Les masses éruptives intrusives et la formation des montagnes.

Soc. Cient. "Ant. Alzate," Mem. y Rev., t. 21, pp. 5-8, 1 fig., 1904.

Discusses the part played by intrusives in the formation of mountains.

Burckhardt (Carlos) and **Scalia** (Salvador).

1. La fauna marine du Trias Supérieur de Zacatecas [Mexique].

México, Inst. Geol., Bull. no. 21, 44 pp., 8 pls., 1905.

Bureau (Ed.).

1. Sur une collection de végétaux fossiles des Etats-Unis.

Mus. d'Hist. Nat., Paris, Bull., t. 9, pp. 250-251, 1903.

Gives a brief account of a collection of fossil Cretaceous plants from Kansas and Colorado.

Burgess (John D.).

1. Secondary enrichment.

Eng. & Mg. Jour., vol. 76, p. 153, 1903.

2. Recent discoveries in Arizona.

Eng. & Mg. Jour., vol. 76, p. 936, 1903.

Describes geologic structure in the region of the Santa Catalina Mountains, and the discovery of gold ores.

Burk (W. E.).

1. The fluorspar mines of western Kentucky and southern Illinois.

Min. Ind. for 1900, pp. 293-295, 1901.

Describes the general geology of the region and the occurrence of the fluorspar deposits.

2. Asphalt rock in Kentucky.

Eng. & Mg. Jour., vol. 75, pp. 969-970, 1 fig., 1903.

Describes the occurrence and character of the rock producing asphalt.

Burns (David).

1. On the phenomena accompanying the volcanic eruptions in the West Indies.

Brit. Assoc. Adv. Sci., Rept. 73d meeting, pp. 567-568, 1904.

Burr (Henry T.).

1. The structural relations of the amygdaloidal melaphyr in Brookline, Newton, and Brighton, Mass.

Harvard Coll., Mus. Comp. Zool., Bull., vol. 38, pp. 53-68, 2 pls., 3 figs., 1901. Abstract: Am. Geol., vol. 27, p. 319, 1901; Am. Jour. Sci., 4th ser., vol. 12, pp. 80-81, 1901.

Discusses the evidence for the intrusive character of the melaphyr.

Burritt (Chas. H.).

1. The Coal Measures of the Philippines.

U. S. War Dept., Rept. of the U. S. Military Governor in the Philippines, 256 pp., 1901.

Describes the coal-mining industry of the Philippine Islands. Includes notes on the occurrence and geologic relations of coal deposits.

Burrows (John Shober).

1. The Barnesboro-Patton field of central Pennsylvania.

U. S. Geol. Surv., Bull. no. 225, pp. 295-310, 1904.

Describes location and stratigraphy of the field, the character and occurrence of the coal seams, composition and value of the coal, and the mining developments.

Burwash (E. M.).

1. The geology of Michipicoten Island.

Toronto Univ., Studies, Geol. Ser. no. 3, 48 pp., 9 pls., 1905.

Reviews previous geological work relating to the island, describes its geologic structure, and the character, occurrence, and relations of igneous and pre-Cambrian rocks, and their petrographic characters.

Bush (B. F.).

1. The coal fields of Missouri.

Am. Inst. Mg. Engrs., Bi-mo. Bull., no. 1, pp. 165-179, 3 figs., 1905; Trans., vol. 35, pp. 903-917, 3 figs., 1905.

Bush (Lucy P.).

1. Note on the dates of publication of certain genera of fossil vertebrates.

Am. Jour. Sci., 4th ser., vol. 16, pp. 96-98, 1903.

Bushnell (D. I., jr.).

1. The small mounds of the United States.

Science, new ser., vol. 22, pp. 712-714, 1905.

Discusses the origin of various small mounds.

Butts (Charles).

1. Fossil faunas of the Olean quadrangle.

N. Y. State Mus., Bull. 69, pp. 990-995, 1903.

Gives lists of fossils, showing their distribution by zones in the Devonian and Carboniferous formations of this quadrangle.

2. Recent structural work in western Pennsylvania.

Abstract: Science, new ser., vol. 15, p. 823, 1902.

3. Coal mining along the southeastern margin of the Wilmore basin, Cambria County, Pa.

U. S. Geol. Surv., Bull. no. 225, pp. 325-329, 1904.

Describes the location and geologic structure of the field and the mining operations.

4. Kittanning folio, Pennsylvania.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 115, 1904.

Describes physiographic features, the character, occurrence, and relations of Carboniferous strata, and particularly of the coal beds, the geologic structure and geologic and geographic history, and the economic resources, mainly coal, petroleum, and natural gas. The section on glacial gravels is contributed by Frank Leverett.

5. The Warrior coal basin in the Brookwood quadrangle, Alabama.

U. S. Geol. Surv., Bull. no. 260, pp. 357-381, 1 fig., 1905.

Describes the location, extent, stratigraphy, and structure of the field, and the character, occurrence, and mining of the coal.

6. Rural Valley folio, Pennsylvania.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 125, 1905.

Describes the geography and physiography, the occurrence, character, and relations of Carboniferous strata and Quaternary deposits, the geologic history, and the mineral resources, chiefly coal and natural gas.

7. Ebensburg folio, Pennsylvania.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 133, 1905.

Describes the physiography, the occurrence, character, and relations of Devonian and Carboniferous strata, the geologic structure and history of the area, and the economic resources chiefly coal.

Byers (Charles Alma).

1. A petrified forest covering thousands of acres.

   Sci. Am., vol. 92, p. 388, 4 figs., 1905.

   Describes the petrified forest near the Painted Desert, Arizona.

Byers (H. G.).

1. The water resources of Washington. Potable and mineral water.

   Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 285–295, 2 pls., 1902.

Byrne (John).

1. Geography, history, production, fissure systems, distribution of ores, character of ores [of the Butte, Montana, mining district].

   Mont. Inspector of Mines, 14th Ann. Rept., pp. 26–33 [1903].

   Includes a brief account of the general geology of the vicinity of Butte, Montana, of the fissures and veins, and the occurrence of the ore deposits of silver and copper ores.

Byrne (P.).

1. Marble formations of the Cahaba River, Alabama.

   Eng. and Mg. Jour., vol. 72, p. 400, 1901.

   Describes the general character and distribution of the marble.

2. Marble formations of the Cahaba River, in Alabama.

   Eng. Assoc. South, Trans., 1901, vol. 12, pp. 48–59, 3 figs. [1902].

   Describes occurrence and character of marble in this region.

C.

Caballero (Gustavo de J.).

1. Le cobalt au Mexique.

   Soc. Cient. Ant. Alz., Mem. y Rev., vol. 18, pp. 197–201, 1902.

   Describes the occurrence and character of cobalt-bearing ore deposits in Mexico.

2. El vanadio de Charcas, E. de San Luís Potosí, México.

   Soc. Cient. Ant. Alz., Mem. y Rev., t. 20, pp. 87–98, 1903.

   Describes the occurrence and character of deposits containing vanadium in the state of San Luis Potosi, Mexico.

Cahill (Edward G.).

1. The method used in working the silver-lead mines of Santa Eulalia, Chihuahua, Mexico.

   Cal. Jour. Techn., vol. 3, pp. 145–149, 1 pl., 1904.

   Gives notes on the occurrence and geologic relations of the silver-lead ore deposits.

Calkins (Frank C.).

1. A contribution to the petrography of the John Day Basin.

   Univ. of Cal., Dept. of Geol., Bull., vol. 3, pp. 109–172, 1 pl., 1902.

   Gives a resume of the geology of the John Day Basin in Oregon, and describes the rocks occurring in the pre-Eocene, Eocene, and Miocene formations in this region.

2. Soils of the wheat lands of Washington.

   Abstract: Science, new ser., vol. 17, p. 669, 1903.

   Discusses the origin of the soils.

3. Geology and water resources of a portion of east-central Washington.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 118, 96 pp., 4 pls., and 14 figs., 1905.

   Describes the general geology and physiographic features, and discusses in detail the water resources of the area, particularly artesian water.

Calkins (Frank C.), **Smith** (George Otis) and.

1. A geological reconnaissance across the Cascade Range near the Forty-ninth Parallel.

   See **Smith** (George Otis) and **Calkins** (Frank C.), 1.

Calvin (Samuel).

1. Geology of Page County [Iowa].

   Iowa Geol. Surv., vol. 11, pp. 400–460, 10 figs. and map, 1901.

   Describes the physiography, the character and occurrence of the Carboniferous, Cretaceous and Pleistocene strata, and the occurrence of economic products.

Calvin (Samuel)—Continued.

2. Concerning the occurrence of gold and some other mineral products in Iowa.

   Am. Geol., vol. 27, pp. 363-372, 1901.

   Describes the origin and occurrence of various minerals and notes some of the popular fallacies that are held concerning them.

3. The geology and geological resources of Iowa.

   Int. Mg. Cong., 4th session, Proc., pp. 52-56, 1901.

   Describes the stratigraphic geology and the occurrence of economic products of the State.

4. The geological formations of Iowa.

   Stone, vol. 25, pp. 118-124, 4 figs., 1902.

   Describes briefly the character and distribution of the geologic formations in the State.

5. Tenth annual report of the State geologist [Iowa].

   Iowa Geol. Surv., vol. 12, Ann. Rept., 1901, pp. 11-27, 1 pl., 1902.

   Gives a nomenclature of the divisions of the Glacial period and discusses the geologic occurrence of oil and gas.

6. Concrete examples from the topography of Howard County, Iowa.

   Am. Geol., vol. 30, pp. 375-381, 1 pl., 1902.

   Describes the topographic forms of the region and reviews its glacial history.

7. The geology and geological resources of Iowa—the formations and their economical values.

   Mines & Minerals, vol. 22, pp. 560-561, 1902.

8. [In discussion of paper by T. C. Chamberlin on "The geologic relations of the human relics of Lansing, Kan."]

   Jour. Geol., vol. 10, pp. 777-778, 1902.

9. Artesian wells in Iowa.

   Iowa State Institutions, Bull., vol. 4, pp. 402-408, 1902.

   Discusses the general conditions for artesian wells and the underground formations of Iowa as sources for artesian water.

10. Geology of Howard County [Iowa].

    Iowa Geol. Surv., vol. 13, pp. 21-79, 15 figs., 1903.

    Describes topograpy and drainage, the lithologic and faunal characteristics and occurrence of Devonian and Ordovician strata and their geologic relations, the surficial deposits, and the economic resources.

11. Geology of Chickasaw County [Iowa].

    Iowa Geol. Surv., vol. 13, pp. 255-292, 10 figs., 1903.

    Describes topography and drainage, the occurrence, character, and geologic relations of Devonian strata and Glacial deposits, and the economic resources.

12. Geology of Mitchell County [Iowa].

    Iowa Geol. Surv., vol. 13, pp. 293-338, 12 figs., 1903.

    Describes physiographic features, the character, occurrence, and geologic relations of Devonian strata and Glacial deposits, and the economic resources.

13. Physiography of Iowa.

    Iowa Weather and Crop Service, Ann. Rept. for 1902, Appendix, pp. 3-11, 1 pl., 1903.

    Describes topography and drainage. Includes an account of the distribution of the drift deposits and their relation to physiographic features.

14. Twelfth annual report of the State geologist [Iowa].

    Iowa Geol. Surv., vol. 14, pp. 1-6, 3 pls. (maps), 1904.

15. The Aftonian gravels and their relations to the drift sheets in the region about Afton Junction and Thayer [Iowa].

    Davenport Acad. Sci., Proc., vol. 10, pp. 18-31, 7 pls., 1905.

Campbell (C. M.).

1. Mining in the Rossland district [British Columbia].

   Can. Mg. Inst., Jour., vol. 5, pp. 447-483, 36 figs., 2 pls., 1902. Abstract: Can. Mg. Rev., vol. 21, pp. 183-194, 1902.

   Contains notes on the rocks of this area.

Campbell (H. D.).

1. The Cambro-Ordovician limestones of the middle portion of the Valley of Virginia.

   Am. Jour. Sci., 4th ser., vol. 20, pp. 445–447, 1905.

   Names and describes Cambrian and Ordovician formations in the Valley of Virginia.

Campbell (H. D.) and **Howe** (James Lewis).

1. A new (?) meteoric iron from Augusta Co., Virginia.

   Am. Jour. Sci., 4th ser., vol. 15, pp. 469–471, 1 fig., 1903.

Campbell (John T.).

1. Evidence of a local subsidence in the interior [Indiana].

   Jour. Geol., vol. 9, pp. 437–438, 1901.

   Difference in levelings made in 1883 and in 1901 show a subsidence in Parke County, Indiana.

Campbell (Marius R.).

1. Hypothesis to account for the extra-Glacial abandoned valleys of the Ohio Basin.

   Abstract: Geol. Soc. Am., Bull., vol. 12, p. 462, 1901; Science, new ser., vol. 13, pp. 98–99, 1901.

   Discusses their formation as due to formation and persistence of local ice dams.

2. Charleston folio, West Virginia.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 72, 1901.

   Describes the geographic and topographic features of the region, the stratigraphy, the character and occurrence of the Carboniferous and Pleistocene strata, the geologic structure, and the mineral resources of the quadrangle.

3. Recent geological work in western Pennsylvania.

   Eng. & Mg. Jour., vol. 73, p. 245, 1902.

   Abstract of paper read before the Geological Society of Washington.

4. Reconnaissance of the borax deposits of Death Valley and Mohave Desert [California].

   U. S. Geol. Surv., Bull. no. 200, 23 pp., 1 pl., 1902; Eng. & Mg. Jour., vol. 74, pp. 517–519, 1 fig., 1902.

   Describes topography and geology of the region and occurrence of borax deposits.

5. Raleigh folio, West Virginia.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 77, 1902.

   Describes geographic and topographic features, general geologic relations, the character and occurrence of Carboniferous formations and coal beds.

6. Masontown-Uniontown folio, Pennsylvania.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 82, 1902.

   Describes geographic and topographic features, general geologic relations, character and occurrence of Devonian and Carboniferous strata, Quaternary deposits, and the mineral resources, chiefly coal.

7. Recent geological work in Pennsylvania.

   Abstract: Science, new ser., vol. 15, p. 189, 1902.

8. Brownsville-Connellsville folio, Pennsylvania.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 94, 1903.

   Describes geographic, physiographic, and geologic relations to Appalachian province, surface features and drainage, physiographic history, geologic structure, character and occurrence of the Carboniferous strata and Quaternary deposits, character and occurrence of the coal beds and other economic resources. The section on natural gas is contributed by Myron L. Fuller.

9. Geographic development of northern Pennsylvania and southern New York.

   Geol. Soc. Am., Bull., vol. 14, pp. 277–296, 1 fig., 1903.

   Describes physiographic features of this region and discusses the mode and time of their origin.

10. Variation and equivalence of the Charleston sandstone.

    Jour. Geol., vol. 11, pp. 459–468, 1903.

    Reviews the divergent views as to the correlation of the sandstone of West Virginia, which the writer named the Charleston sandstone, with the Mahoning sandstone of Pennsylvania, and presents additional evidence for the author's view as to their distinctness.

Campbell (Marius R.)—Continued.

11. Recent work in the bituminous coal field of Pennsylvania.

U. S. Geol. Surv., Bull. no. 213, pp. 270-275, 1903.

Discusses the general structure and relations of the coal, natural gas, and oil bearing beds.

12. Borax deposits of eastern California.

U. S. Geol. Surv., Bull. no. 213, pp. 401-405, 1903.

Describes the occurrence and utilization of borax deposits in this area.

13. Basin-range structure in the Death Valley region of southeastern California.

Abstract: Science, new ser., vol. 17, p. 302, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903; Am. Geol., vol. 31, pp. 311-312, 1903.

14. Pocono rocks in the Allegheny Valley.

Abstract: Science, new ser., vol. 17, p. 942, 1903.

15. Conglomerate dikes in southern Arizona.

Am. Geol., vol. 33, pp. 135-138, 2 pls., 1904.

Describes the general geologic structure of the region, the occurrence and character of the dike, and the source of its material.

16. The Deer Creek coal field, Arizona.

U. S. Geol. Surv., Bull. no. 225, pp. 240-258, 1 fig., 1904.

Describes location, stratigraphy, and geologic structure of the field, the character and occurrence of coal seams, and the composition and value of the coal.

17. The Meadow Branch coal field of West Virginia.

U. S. Geol. Surv., Bull. no. 225, pp. 330-344, 1 fig., 1904.

Describes location of the field, the stratigraphy and geologic structure, the character and occurrence of the coal beds, the quality of the coal and the mining developments. Includes a short report by David White on the fossil plants.

18. Latrobe folio, Pennsylvania.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 110, 1904.

Describes physiographic features, the general geologic structure and history of the area, the character and occurrence of Devonian and Carboniferous strata and Quaternary deposit and the mineral resources, chiefly coal.

19. Glacial erosion in the Finger Lake region, New York.

Abstract: Science, new ser., vol. 19, pp. 531-532, 1904.

Discusses the origin of the present physiographic features of this region.

20. Hypothesis to account for the transformation of vegetable matter into the different grades of coal.

Econ. Geol., vol. 1, pp. 26-33, 1905.

21. The classification of coals.

Am. Inst. Mg. Engrs., Bi-Mo. Bull., no. 5, pp. 1033-1049, 1905.

Campbell (Marius R.) and **White** (David).

1. The bituminous coal field of Pennsylvania.

See **White** (David) and **Campbell** (M. R.), 1.

Campbell (Marius R.), **White** (David), and **Haseltine** (Robert M.).

1. The northern Appalachian coal field.

See **White** (David), **Campbell** (M. R.), and **Haseltine** (R. M.), 1.

Camsell (Charles).

1. The region southwest of Fort Smith, Slave River, N. W. T.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 149-167, 1903.

Contains observations on the geology of the region examined.

2. Country around the headwaters of the Severn River.

Can. Geol. Surv., Summ. Rept. for 1904, pp. 143-152, 1 map, 1905.

Includes observations on the geology of the region examined.

Capilla (Alberto).

1. Los yacimientos de fierro de "Tatatila," Cantón de Jalapa, E. de Vera Cruz [México].

Secretaría de Fomento [México], Bol., 2ª época, año 3, no. 10, II, pp. 5[illegible]-542, 1904; Soc. Cient. Ant. Alz., Mem. y Rev., t. 19, pp. 341-346, 1904.

Decribes the character and occurrence of iron-ore deposits in the state of Vera Cruz, Mexico.

Capps (S. R.) and **Leffingwell** (E. D. K.).

1. Pleistocene geology of the Sawatch Range, near Leadville, Colo.

Jour. Geol., vol. 12, pp. 698-706, 2 figs., 1904.

Discusses the extent in this region of the ice during the Glacial epoch, and describes the drift deposits, terraces, and drainage changes.

Caracristi (C. F. Z.).

1. The trans-Pecos sulphur field. A report on their economic geology and value.

Bloomington, Illinois [1905]. 44 pp., 7 pls. [Private publication.]

Gives notes on the occurrence and geology of the sulphur deposits in El Paso County, Texas.

Carlyle (E. J.).

1. The Pioneer iron mine, Ely, Minn.

Can. Mg. Inst., Jour., vol. 7, pp. 335-367, 25 figs., 1904.

Includes some account of the general geology of the region, and of the character, occurrence, and geologic relations of the iron-ore deposits.

Carmony (F. A.).

1. Jefferson County [Nebraska].

Nebr. Geol. Surv., vol. 1, pp. 235-241, 10 figs., 1903.

Describes topography and drainage and stratigraphic and economic geology.

Carney (Frank).

1. A type case in diversion of drainage.

Jour. Geog., vol. 2, pp. 115-124, 7 figs., 1903.

Discusses physiographic features and drainage changes in Cortland and Tompkins counties, New York.

2. Direction of pre-Glacial stream flow in central New York.

Am. Geol., vol. 33, pp. 196-198, 1904.

Discusses criticisms of Professor Fairchild upon the writer's paper, "A type case in diversion of drainage."

Carpenter (Franklin R.).

1. The new geology and vein formation.

Colo. Sci. Soc., Proc., vol. 7, pp. 253-266, 1904.

Discusses ore formation from the standpoint of the planetesimal hypothesis.

2. Vein formation and the new geology.

Eng. & Mg. Jour., vol. 77, p. 312, 1904.

Carter (O. S. C.).

1. Artesian wells as a water supply for Philadelphia.

Franklin Inst., Jour., vol. 135, pp. 58-61, 1893.

2. Anthracite coal near Perkiomen Creek [Pennsylvania].

Franklin Inst., Jour., vol. 138, pp. 152-156, 1894.

3. Drilling for oil and natural gas in the vicinity of Philadelphia.

Franklin Inst., Jour., vol. 138, pp. 230-236, 1894.

4. A ferruginized tree.

Franklin Inst., Jour., vol. 141, pp. 227-229, 1896.

5. The arid district between the Rio Grande and the Pacific traversed by the engineers of the Mexican Boundary Commission in 1892-94.

Phila. Engrs. Club, Proc., vol. 19, pp. 252-267, 1902.

Contains notes on the physiography of the region.

6. The petrified forests and Painted Desert of Arizona.

Franklin Inst., Jour., vol. 157, pp. 293-311, 11 figs., 1904.

Gives observations upon the physiography and geology of the region.

Carter (W. E. H.).

1. The mines of Ontario.

Can. Mg. Inst., Jour., vol. 7, pp. 114-167, 1904.

Includes observations on the occurrence in Ontario of deposits of gold, silver, copper, nickel, iron, lead, and zinc ores, corundum, graphite, mica, and other minerals.

Case (E. C.).

1. Systematic paleontology. Eocene Reptilia.
   Md. Geol. Surv., Eocene, pp. 95–98, 2 pls., 1901.
2. Paleontological notes.
   Jour. Geol., vol. 10, pp. 256–261, 2 pls., 1902. Walker Mus., Contr., vol. 1, no. 3, 1902.
   Describes Lysorophus tricarinatus and an undetermined Pelycosaurian.
3. On some vertebrate fossils from the Permian beds of Oklahoma.
   Okla., Dept. Geol. & Nat. Hist., 2d Bien. Rept., pp. 62–68, 1902.
4. The osteology of Embolophorus dollovianus, Cope, with an attempted restoration.
   Jour. Geol., vol. 11, pp. 1–28, 23 figs., 1903.
5. New or little-known vertebrates from the Permian of Texas.
   Jour. Geol., vol. 11, pp. 394–402, 10 figs., 1903.
6. The structure and relationships of the American Pelycosauria.
   Am. Nat., vol. 37, pp. 85–102, 10 figs., 1903.
7. The osteology of the skull of the pelycosaurian genus, Dimetrodon.
   Jour. Geol., vol. 12, pp. 304–311, 6 figs., 1904.
8. On the structure of the fore foot of Dimetrodon.
   Jour. Geol., vol. 12, pp. 312–315, 3 figs., 1904.
9. Systematic paleontology of the Miocene deposits of Maryland: Mammalia, Aves, Reptilia.
   Md. Geol. Surv., Miocene, pp. 3–70, 18 pls., 1904.
10. A remarkably preserved specimen of a pelycosaur collected during the last summer in Texas.
    Abstract: Science, new ser., vol. 19, p. 253, 1904.
11. The morphology of the skull of the pelycosaurian genus Dimetrodon.
    Am. Phil. Soc., Trans., new ser., vol. 21, pt. 1, pp. 1–29, 7 pls. and 8 figs., 1905.
12. The osteology of the Diadectidæ and their relations to the Chelydosauria.
    Jour. Geol., vol. 13, pp. 126–159, 20 figs., 1905.
13. Bathygnathus borealis Leidy, and the Permian of Prince Edwards Island.
    Science, new ser., vol. 22, pp. 52–53, 1905.
14. Œcological features of evolution.
    Wis. Nat. Hist. Soc., Bull., new ser., vol. 3, pp. 169–180, 1905.
15. Characters of the Chelydosauria.
    Abtract: Science, new ser., vol. 21, p. 298, 1905.

Casey (Thomas L.).

1. The Jackson outcrops on Red River [Louisiana].
   Science, new ser., vol. 15, pp. 716–717, 1902.
   Describes outcrops and discusses the fauna obtained, describing two new species.
2. On the probable age of the Alabama white limestone.
   Phila. Acad. Nat. Sci., Proc., vol. 53, pp. 513–518, 1902.
   Discusses the geologic age and relations of the Alabama white limestone, Jackson and Vicksburg stages and other Tertiary formations in the light of evidence of their fossils.
3. A new genus of Eocene Eulimidæ.
   Nautilus, vol. 16, pp. 18–19, fig., 1902.
4. Notes on the Conrad collection of Vicksburg fossils, with descriptions of new species.
   Phila. Acad. Nat. Sci., Proc., vol. 55, pp. 261–283, 1903.
5. Notes on the Pleurotomidæ, with description of some new genera and species.
   St. Louis Acad. Sci., Trans., vol. 14, pp. 123–170, 1904.
6. The mutation theory.
   Science, new ser., vol. 22, pp. 307–309, 1905.
   Calls attention to the support which Tertiary mollusca, particularly from Mississippi deposits, give to the mutation theory.

Catherinet (Jules).

1. Copper Mountain, British Columbia.

   Eng. & Mg. Jour., vol. 79, pp. 125-127, 6 figs., 1905.
   Discusses the occurrence and origin of the copper ores of this locality.

Catlett (Charles).

1. Coal-outcrops.

   Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 559-566 and 1005-1109, 1901. Mines & Minerals, vol. 21, pp. 255-257, 3 figs., 1901.
   Discusses the variations in character of the strata of outcrop and the conditions some distance under cover.

2. Geological relations of the manganese ore deposits of Georgia. [In discussion of paper of Thomas L. Watson.]

   Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 968-969, 1904.
   Discusses character, occurrence, and origin of manganese ores.

3. Cement resources of the Valley of Virginia.

   U. S. Geol. Surv., Bull., no. 225, pp. 457-461, 1904.
   Describes location, geologic relations, and character of the raw materials.

Chalmers (Robert).

1. Notes on the Pleistocene marine shore lines and landslips of the north side of the St. Lawrence Valley.

   Can. Geol. Surv., new ser., vol. 11, Rept. J, Appendix I, pp. 63-70, 1901. Published in 1900.
   Describes the shore lines and the occurrence of the landslips.

2. The sources and distribution of the gold-bearing alluvions of Quebec.

   Ottawa Nat., vol. 15, pp. 33-36, 1 fig., 1901.
   Describes the occurrence of gold and the source of the material.

3. Report on the surface geology shown on the Fredericktown and Andover quarter-sheet maps, New Brunswick.

   Can. Geol. Surv., new ser., vol. 12, pp. 1M-41M, map, 1902.
   Describes physiography, striæ and other glacial phenomena of this area.

4. On borings for natural gas, petroleum, and water; also notes on the surface geology of part of Ontario.

   Can. Geol. Surv., Summ. Rept. for 1901, pp. 158-169, 1902.

5. Artesian borings, surface deposits, and ancient beaches in Ontario.

   Can. Geol. Surv., Summ. Rept. for 1902, pp. 268-279, 1903.
   Describes work upon surface deposits, exploration for natural gas and oil, determination of ancient shore lines of the Great Lakes, and the occurrence and utilization of peat.

6. The geomorphic origin and development of the raised shore lines of the St. Lawrence Valley and Great Lakes.

   Am. Jour. Sci., 4th ser., vol. 18, pp. 175-179, 1904.
   Describes high-level shore lines and discusses their origin and geologic history.

7. Peat in Canada.

   Can. Geol. Surv., Min. Res. of Can., Bull. on Peat, 40 pp., 1904.
   Discusses the occurrence and utilization of peat in Canada. Includes notes upon the geology and physical features of peat bogs.

8. Surface geology of the southern part of the Province of Quebec.

   Can. Geol. Surv., Summ. Rept. for 1903, pp. 140-143, 1904.

9. The glaciation of Mount Orford, P. Q. [Canada].

   Ottawa Nat., vol. 19, pp. 52-55, 1905.

10. Surface geology of eastern Quebec.

    Can. Geol. Surv., Summ. Rept. for 1904, pp. 250-263, 1905.

Chamberlin (Rollin T.).

1. The glacial features of the St. Croix Dalles region.

   Jour. Geol., vol. 13, pp. 238-256, 3 figs., 1905.

Chamberlin (Thomas C.).

1. [Geologic terminology.]

   Jour. Geol., vol. 9, pp. 267-270, 1901.

Chamberlin (Thomas C.)—Continued.

2. On a possible function of disruptive approach in the formation of meteorites, comets, and nebulæ.

   Jour. Geol., vol. 9, pp. 369–392, 1 pl., 1901.
   Discusses the possibility of mass disruption without collision and the probable effects.

3. Report on some studies relative to primal questions in geology.

   Abstract: Sci. Am. Suppl., vol. 52, p. 21504, 1901.

4. On Lord Kelvin's address on the age of the earth as an abode fitted for life.

   Smith. Inst., Ann. Rept., 1899, pp. 223–246, 1901.

5. The geologic relations of the human relics of Lansing, Kansas.

   Jour. Geol., vol. 10, pp. 745–777, 13 figs., 1902.
   Discusses certain phases of fluvial action and their bearing on the phenomena at this locality. Describes the character of the river deposits and presents the author's interpretations.

6. Distribution of the internal heat of the earth.

   Abstract: Science, new ser., vol. 15, p. 89, 1902.

7. Has the rate of rotation of the earth changed appreciably during geological history?

   Abstract: Science, new ser., vol. 15, p. 89, 1902.

8. The criteria requisite for the reference of relics to a glacial age.

   Jour. Geol., vol. 11, pp. 64–85, 1 fig., 1903.

9. Distribution of the internal heat of the earth.

   Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 530–531, 1903.
   Brief note on the character of the paper.

10. Has the rate of rotation of the earth changed appreciably during geological history?

    Abstract: Geol. Soc. Am., Bull., vol. 13, p. 531, 1903.
    Brief note on the theory of a high rate of terrestrial rotation in early geologic times.

11. The origin of ocean basins on the planetesimal hypothesis.

    Abstract: Am. Geol., vol. 32, p. 14, 1903; Science, new ser., vol. 17, pp. 300–301, 1903; Geol. Soc. Am., Bull., vol. 14, p. 548, 1904.

12. [The geological survey of the Lake Superior region.]

    Jour. Geol., vol. 12, pp. 276–277, 1904.
    Reviews the work and publications of the U. S. Geological Survey upon the Lake Superior ore-bearing series.

13. Fundamental problems of geology.

    Carnegie Inst. of Wash., Yearb. no. 2, 1903, pp. 261-270, 1904.
    Discusses lines of research upon fundamental problems of geology.

14. A contribution to the theory of glacial motion.

    Chicago Univ., Decennial Publications, 1st ser., vol. 9, pp. 193–206, 3 pls., 3 figs., 1904.

15. Fundamental problems of geology.

    Carnegie Inst. of Wash., Yearb. no. 3, 1904, pp. 195–258, abstract, pp. 117–118, 1905.

Chamberlin (Thomas C.) and **Salisbury** (Rollin D.).

1. Geology. In two volumes. Vol. 1. Geologic processes and their results.

   New York, Henry Holt and Company, 1904. xix, 654 pp., 24 pls., and 471 figs.

Chance (H. M.).

1. Gold ores of the Black Hills, South Dakota.

   Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 278–285, 1901.
   Describes the peculiar occurrence of gold in the nearly horizontal Cambrian sandstones and shales in the vicinity of Deadwood.

2. The iron mines of Hartville, Wyoming.

   Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 987-1003, 1 fig., 1901.
   Describes the occurrence and character of the ore bodies and gives detailed descriptions of the mine workings.

Chaney (L. W.).

1. Glacial exploration in the Montana Rockies.

Intern. Geog. Cong., Eighth, Rept., pp. 403-496, 1905.

Chapman (Robert H.).

1. Our northern Rockies.

Nat. Geog. Mag., vol. 13, pp. 361-372, 10 figs., 1902.
Contains physiographic notes on the Rocky Mountains in Montana.

2. The value of topographic maps.

Mg. & Sci. Press, vol. 85, p. 148, 1902.

Charles (H. W.).

1. Dakota sandstone in Washington County [Kansas].

Kans. Acad. Sci., Trans., vol. 17, p. 194, 1901.
Describes its general characteristics in this county.

Charlton (O. C.).

1. Note on the Mart and Bluff meteorites.

Texas Acad. Sci., Trans., vol. 4, pp. 83-84, 1901.
Brief description of occurrence and character.

Chatard (T. M.) and **Whitehead** (Cabell).

1. An examination of the ores of the Republic mine, Washington.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 419-423, 1901.
Describes the chemical studies made of these gold and silver ores.

Chazal (Philip E.).

1. The century in phosphates and fertilizers. A sketch of the South Carolina phosphate industry.

Charleston, S. C., 71 pp., 1904.
Includes an account of the occurrence, geologic relations, character, origin, and economic development of the phosphate deposits of South Carolina.

Chester (Albert H.).

1. Mineralogical notes and explorations.

N. J. Geol. Surv., Ann. Rept. for 1900, pp. 173-188, 1901.
Describes the occurrence and chemical composition of several minerals.

Chibas (Eduardo J.).

1. Manganese mining in Cuba.

Mines and Minerals, vol. 21, pp. 295-296, 1901.
Abstract of report on the manganese mines near Santiago.

Christy (S. B.).

1. Biographical notice of Joseph LeConte.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 765-793, 1 pl., 1902.

Church (John A.).

1. The Tombstone, Arizona, mining district.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 3-37, 12 figs., 1903.
Describes the character and occurrence of sedimentary strata, the geologic structure, the character and occurrence of eruptive rocks, and the position and relations of the ore bodies of gold, silver, and manganese.

2. [In discussion of paper by Walter P. Jenney, "The chemistry of ore-deposition."]

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1065-1070, 1903.
Discusses occurrences of ore deposits and their bearing upon the subject of the paper under discussion.

3. Enrichment in veins.

Eng. & Mg. Jour., vol. 80, p. 695, 1905.

Cilley (Frank H.).

1. Some fundamental propositions in the theory of elasticity. A study of primary or self-balancing stresses.

Am. Jour. Sci., 4th ser., vol. 11, pp. 269-290, 1901.
Discusses briefly the application of the theory to the study of the inner condition of the earth.

Cirkel (Fritz).

1. Vorkommen und Gewinnung von Asbest in Canada.

Zeitsch. f. prak. Geol., Jg. 11, pp. 123–131, 3 figs., 1903.

Describes occurrence and character of asbestos deposits in Quebec and the mining developments.

2. Mica deposits.

Can. Mg. Rev., vol. 23, pp. 82–86, 104–108, 128–133, 13 figs., 1904.

Describes the occurrence and character of mica and phlogopite deposits in Canada and elsewhere and their economic development in Canada.

3. Asbestos: its occurrence, exploitation, and uses.

Can., Dept. of the Interior, Mines Branch, Ottawa, 1905. 169 pp., 38 figs., 1 map, and 2 charts.

4. Mica: its occurrence, exploitation and uses.

Can., Dept. of the Interior, Mines Branch, Ottawa, 1905. 148 pp., 1 pl., 38 figs., and 1 map.

Clapp (Frederick G.).

1. Geological history of the Charles River [Massachusetts].

Tech. Quart., vol. 14, pp. 171–201, 13 figs., pp. 255–269, 4 figs., 1901; Am. Geol., vol. 29, pp. 218–233, 4 pls., 1902.

Describes the various stages of the river's development and their causes, its relation to the geologic structure and the Tertiary and Glacial history of the region.

2. Relations of gravel deposits in the northern part of Glacial Lake Charles, Massachusetts.

Jour. Geol., vol. 12, pp. 198–214, 3 figs., 1904.

Describes sand plains, gravel, and other Glacial deposits in the valley of the Charles River in Massachusetts, and discusses their characteristics and formations, the disappearance of the Glacial ice, and connected events.

3. Water resources of the Curwensville, Patton, Ebensburg, and Barnesboro quadrangles, Pennsylvania.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 159–163, 1905.

4. Limestones of southwestern Pennsylvania.

U. S. Geol. Surv., Bull. no. 249, 52 pp., 7 pls., 1905.

Describes the character, occurrence, and geologic relations of limestones of southwestern Pennsylvania, with especial reference to their availability for the manufacture of cement.

Clapp (Frederick G.), **Fuller** (M. L.) and.

1. Marl-loess of the lower Wabash Valley.

See **Fuller** (M. L.) and **Clapp** (F. G.), 1.

2. Patoka folio, Indiana-Illinois.

See **Fuller** (Myron L.) and **Clapp** (Frederick G.), 2.

Clark (P. Edwin), **Van Ingen** (Gilbert) and.

1. Disturbed fossiliferous rocks in the vicinity of Rondout, N. Y.

See **Van Ingen** (Gilbert) and **Clark** (P. E.), 1.

Clark (W. Blair).

1. Drainage modifications in Knox, Licking, and Coshocton counties [Ohio].

Denison Univ., Sci. Lab., Bull., vol. 12, art. 1, pp. 1-16, 3 pls., 1902.

Discusses modifications produced in the drainage of this area by the ice of the Glacial period.

Clark (William).

1. Some new points on the fin attachment of Dinichthys and Cladodus.

Ohio State Acad. Sci., 6th Ann. Rept., pp. 46–48, 3 figs., 1898.

Clark (William Bullock).

1. Maryland Geological Survey, volume four.

Baltimore, The Johns Hopkins Press, 1902. 524 pp., 69 pls., 34 figs.

2. Reports on Cecil County [Maryland].

Md. Geol. Surv., Cecil Co., 322 pp., 30 pls., 24 figs., 1902. Atlas with 3 maps.

Clark (William Bullock)—Continued.

3. Reports on Garrett County [Maryland].

Md. Geol. Surv., Garrett Co., 340 pp., 26 pls., 12 figs., 1902. Atlas with 2 maps.

4. The Cretaceous-Eocene boundary in the Atlantic coastal plain.

Abstract: Science, new ser., vol. 17, p. 293, 1903.

5. The Matawan formation of Maryland, Delaware, and New Jersey, and its relations to overlying and underlying formations.

Am. Jour. Sci., 4th ser., vol. 18, pp. 435-440, 1904; Johns Hopkins Univ. Circ., 1904, pp. 692-699 (no. 7, pp. 28-35), 1904.

Includes a table showing correlation of Atlantic coast Cretaceous formations with Cretaceous formations of Europe.

6. The Miocene deposits of Maryland. Introduction and general stratigraphic relations.

Md. Geol. Surv., Miocene, pp. xxiii-xxxii, 1 pl., 1904.

7. Systematic paleontology of the Miocene deposits of Maryland: Echinodermata.

Md. Geol. Surv., Miocene, pp. 430-433, 2 pls., 1904.

8. Origin, distribution and uses of coal.

Md. Geol. Surv., vol. 5, pp. 221-240, 3 pls., 1905.

Gives a general account of the use, origin, occurrence, and production of coal, and the extent, character of the coal, etc., of the Appalachian coal field.

Clark (William Bullock) and **Bibbins** (A.).

1. Geology of the Potomac group in the middle Atlantic slope.

Geol. Soc. Am., Bull., vol. 13, pp. 187-214, 7 pls., 1 fig., 1902.

Describes the character, occurrence and distribution of the divisions of the Potomac group, the interpretation of these deposits and the surface configuration of the crystalline floor and of the Potomac group. Discusses the age of these deposits.

2. The Potomac group in Maryland.

Abstract: Science, new ser., vol. 15, p. 905, 1902.

Clark (William Bullock) and **Martin** (George Curtis).

1. The Eocene deposits of Maryland.

Md. Geol. Surv., Eocene, pp. 21-92, 14 pls., 1901.

Describes the general stratigraphic relations, distribution, characters, origin of the materials, and the stratigraphic and paleontologic characteristics of the Eocene strata. Discusses their correlation.

2. Eocene Mollusca.

Md. Geol. Surv., Eocene, pp. 122-203, 41 pls., 1901.

3. Eocene Molluscoidea (Brachiopoda).

Md. Geol. Surv., Eocene, pp. 203-205, 1 pl., 1901.

4. Eocene Echinodermata.

Md. Geol. Surv., Eocene, pp. 232-233, 1 pl., 1901.

5. Correlation of the Coal Measures of Maryland.

Geol. Soc. Am., Bull., vol. 13, pp. 215-232, 11 pls., 1902.

Describes the subdivisions of the Coal Measures group in Maryland and discusses their correlation with the Coal Measures of other portions of the Appalachian province.

6. Correlation of the formations and members [of the Maryland coal district].

Md. Geol. Surv., vol. 5, pp. 291-315, 5 figs., 1905.

Clark (Wm. Bullock), **Martin** (George C.) and **Rutledge** (J. J.).

1. Distribution and character of the Maryland coal beds.

Md. Geol. Surv., vol. 5, pp. 317-512, 15 pls., 1 fig., 1905.

Clarke (C. H.).

1. Notes on the Michipicoten gold-belt.

Eng. & Mg. Jour., vol. 76, pp. 735-736, 1903.

Describes the occurrence of gold ores and the mining developments.

Clarke (Frank Wigglesworth).

1. Mineral analyses from the laboratories of the United States Geological Survey, 1880 to 1903, tabulated by F. W. Clarke, chief chemist.
   U. S. Geol. Surv., Bull. no. 220, 119 pp., 1903.
2. A pseudo-serpentine from Stevens County, Washington.
   Am. Jour. Sci., 4th ser., vol. 15, pp. 397–398, 1903.
3. The composition of glauconite and greenalite.
   U. S. Geol. Surv., Mon., vol. 43, pp. 243–247, 1903.
4. Analyses of rocks from the laboratory of the United States Geological Survey.
   U. S. Geol. Surv., Bull. no. 228, 375 pp., 1904.
   NOTE.—The analyses of rocks have not been listed in the index of this bibliography.
5. A pseudo-serpentine from Stevens County, Washington.
   U. S. Geol. Surv., Bull. no. 262, pp. 69–71, 1905.
   Describes the occurrence and discusses the chemical composition.

Clarke (Frank Wigglesworth) and **Steiger** (George).

1. The action of ammonium chloride upon silicates.
   U. S. Geol. Surv., Bull. no. 207, 57 pp., 1902.
2. On "Californite."
   U. S. Geol. Surv., Bull. no. 262, pp. 72-74, 1905.
   Discusses the chemical composition.

Clarke (John M.).

1. The Oriskany fauna of Becraft Mountain, Columbia County, N. Y.
   N. Y. State Mus., 53rd Ann. Rept., vol. 2, pp. 6–101, 9 pls., and geologic map, 1901.
   See **Clarke** (J. M.), no. 971, in U. S. Geological Survey Bulletin, no. 188.
2. Limestones of central and western New York interbedded with bituminous shales of the Marcellus stage, with notes on the nature and origin of their faunas.
   N. Y. State Mus., Bull. no. 49, pp. 115–138, 1 pl., 2 figs., 1901.
3. New Agelacrinites.
   N. Y. State Mus., Bull. no. 49, pp. 182–198, 1 pl., 7 figs., 1901.
   Reviews the literature regarding these forms and describes three new species.
4. Value of Amnigenia as an indicator of fresh-water deposits during the Devonic of New York, Ireland, and the Rhineland.
   N. Y. State Mus., Bull. no. 49, pp. 199–203, 1 pl., 1901.
5. Report of the State paleontologist, 1901 [N. Y.].
   N. Y. State Mus., Bull. no. 52, pp. 419–456, 1902.
   Contains brief discussion of the results of the studies of the Cambrian, Silurian, and Devonian rocks and fauna of the State in 1901.
6. George Bancroft Simpson.
   N. Y. State Mus., Bull. no. 52, pp. 457–460, 1902.
   Contains an account of his life and work.
7. Paleontologic results of the areal survey of the Olean quadrangle [N. Y.].
   N. Y. State Mus., Bull. no. 52, pp. 524–528, 1902.
   Discusses the paleontologic aspect of the faunas of the Devono-Carboniferous beds of the region.
8. A new genus of Paleozoic brachiopods, Eunoa, with some considerations therefrom on the organic bodies known as Discinocaris, Spathiocaris, and Cardiocaris.
   N. Y. State Mus., Bull. no. 52, pp. 606–615, 4 pls., 2 figs., 1902.
9. [Note on the occurrence and relations of the fauna.] [In Luther (D. D.), Stratigraphic value of the Portage sandstone. N. Y.].
   N. Y. State Mus., Bull. no. 52, pp. 630–631, 1 fig., 1902.
10. The indigene and alien faunas of the New York Devonic.
    N. Y. State Mus., Bull. no. 52, pp. 664–672, 1902.
    Discusses the influence of the supposed barriers in the Devonian seas upon the migrations and distribution of the faunas of that period.

Clarke (John M.)—Continued.

11. Report of the State paleontologist, 1900.

N. Y. State Mus., 54th Ann. Rept., vol. 1, Appendix I, pp. 3-81, 1902.

12. Notes on Paleozoic crustaceans.

N. Y. State Mus., 54th Ann. Rept., vol. 1, Appendix I, pp. 83-119, 4 pls., 1902.

13. Origin of the faunas of the Marcellus limestones of New York.

Abstract: Science, new ser., vol. 15, p. 90, 1902.

14. Report of the State paleontologist, 1902.

N. Y. State Mus., Bull. no. 69, pp. 851-891, 1903.

Gives a review of the work of the office of the State paleontologist of New York for 1901-2.

15. Mastodons of New York.

N. Y. State Mus., Bull. no. 69, pp. 921-933, 2 pls., 1903.

Describes occurrences of mastodon remains in the State of New York.

16. Construction of the Olean rock section.

N. Y. State Mus., Bull. no. 69, pp. 996-999, 1903.

Discusses the discrepancy of results obtained by stratigraphic and paleontologic work in the Olean quadrangle of New York and the geologic position of the Cattaraugus beds.

17. Torsion of the lamellibranch shell, an illustration of Noetling's law.

N. Y. State Mus., Bull. no. 69, pp. 1228-1233, 7 figs., 1903.

18. Some Devonic worms.

N. Y. State Mus., Bull. no. 69, pp. 1234-1238, 2 pls., 1903.

19. Naples fauna in western New York.

N. Y. State Mus., Mem. 6, pp. 199-454, 26 pls., 16 figs., 1903.

Discusses conditions of sedimentation and the distribution of land and water prevailing in the area of western New York in later Devonian times, and the stratigraphy of the Portage and character of the fauna, and gives systematic descriptions of the species and tables of distribution and comparison with faunas of other regions.

20. Classification of New York series of geologic formations.

N. Y. State Mus., Handbook 19, 28 pp., 1903.

Discusses the nomenclature and classification of the New York series of geologic formations. Includes a table showing the geologic position and geographic distribution of formations in the State of New York.

21. Origin of the limestone faunas of the Marcellus shales of New York.

Abstract: Geol. Soc. Am., Bull., vol. 13, p. 535, 1903.

22. Charles Emerson Beecher. Oct. 9, 1856-Feb. 14, 1904.

Am. Geol., vol. 34, pp. 1-13, 1 pl. (por.), 1904.

Includes a chronologic list of Beecher's published papers, prepared by Lucy P. Bush.

23. With regard to Portage crinoids.

Am. Geol., vol. 35, pp. 246-247, 1905.

A short note in regard to nomenclature.

24. Prof. James Hall and the Troost manuscript.

Am. Geol., vol. 35, pp. 256-257, 1905.

25. Report of the State paleontologist [of New York], 1903.

N. Y. State Mus., Bull. no. 80, pp. 3-133, 3 pls., 1905.

Reviews the scientific and office work, and publications of the office of the State paleontologist for the year beginning October 1, 1902. Appendices contain list of accessions, new entries of fossil localities, and type specimens of Paleozoic fossils, Supplement 1.

26. Percé: a brief sketch of its geology.

N. Y. State Mus., Bull. no. 80, pp. 134-171, 9 pls., 13 figs., 1905.

Describes the physiography and general geology of the locality, and in detail its geological structure and the character and occurrence of the fossil faunas, with faunal lists, contained in the rocks of Percé and vicinity, on the coast of Gaspé, Province of Quebec.

27. Ithaca fauna of central New York.

N. Y. State Mus., Bull. no. 82, pp. 53-70, 1905.

Gives general observations upon the fauna, a list of localities from which collections have been made, and lists of the species with their localities.

Clarke (John M.)—Continued.

28. Report of the director, 1904, with the 24th report of the State geologist and the report of the State paleontologist, 1904.

    N. Y. State Mus., 58th Ann. Rept., pp. 5-136, 1905.

    Includes various geologic data and contains Supplement 2 to the list of type specimens of Paleozoic fossils in the New York State Museum.

Clarke (John M.) and **Luther** (D. Dana).

1. Stratigraphic and paleontologic map of Canandaigua and Naples quadrangles [New York].

    N. Y. State Mus., Bull. no. 63, 76 pp., geol. map, 1904.

    Describes in detail the occurrence and the lithologic and faunal characters of the Silurian and Devonian formations included in the area of the map, and gives lists of the fossils of the several formations.

2. Geology of the Watkins and Elmira quadrangles [New York], accompanied by a geologic map.

    N. Y. State Mus., Bull. no. 81, pp. 3-29, and map, 1905.

    Describes the occurrence, character, development, relations, and fossil contents of the Devonian formations represented on the geologic map of this area.

3. Geologic map of the Tully quadrangle [New York].

    N. Y. State Mus., Bull. 82, pp. 35-52, and map, 1905.

    Describes the occurrence, character, development, relations, and fossil contents of the Devonian and Silurian formations represented in this area.

Clarke (John M.) and **Ruedemann** (Rudolf).

1. Guelph fauna in the State of New York.

    N. Y. State Mus., Mem. 5, 195 pp., 21 pls., 1903.

    Describes stratigraphy, occurrence, and geologic relations of the Guelph formation in New York, gives systematic descriptions of the fauna, and discusses the conditions of life and sedimentation during the prevalence of the Guelph fauna, and its distribution.

2. Catalogue of type specimens of Paleozoic fossils in New York State Museum.

    N. Y. State Mus., Bull. 65, 847 pp., 1903.

Clarke (John M.), **Ruedemann** (R.), and **Luther** (D. D.).

1. Contact lines of Upper Siluric formations on the Brockport and Medina quadrangles, N. Y.

    N. Y. State Mus., Bull. no. 52, pp. 517-523, 1902.

    Describes outcrops of these beds at various localities.

Claypole (Edward W.).

1. On an unrecognized coal-horizon in northeastern Ohio.

    Ohio State Acad. Sci., 3d Ann. Rept., pp. 9-12 [1895].

    Discusses stratigraphic position of coal seams in the vicinity of Massillon, Ohio.

2. On the Salina group in northeastern Ohio.

    Ohio State Acad. Sci., 3d Ann. Rept., pp. 12-13 [1895].

3. Notes on petroleum in California.

    Am. Geol., vol. 27, pp. 150-159, 1901.

    Describes the physiographic features of the oil areas, the general geology, and the source of the oil and gas.

4. The Sierra Madre near Pasadena [California].

    Abstracts: Jour. Geol., vol. 9, pp. 69-70, 1901; Geol. Soc. Am., Bull., vol. 12, p. 494, 1901.

    Contains notes on the Tertiary strata and igneous rocks of the region.

5. The Devonian era in the Ohio basin.

    Am. Geol., vol. 32, pp. 15-41, 7 pls., pp. 79-105, 3 pls., pp. 240-250, 312-322, 335-358, 1903.

    Discusses occurrence, lithologic, stratigraphic, and faunal features of Devonian formations in the Ohio basin, geographic and hypsographic conditions prevailing in Devonian times, and geologic and geographic distribution of the invertebrate and vertebrate faunas, and describes briefly species of Cladodus and Monocladodus.

Clearman (Harriet M.).

1. A geological situation in the lava flow, with reference to the vegetation.

    Iowa Acad. Sci., Proc. for 1903, vol. 11, pp. 65-68, 1904.

    Includes observations upon the lava beds of Idaho.

Cleland (Herdman Fitzgerald).

1. The landslides of Mt. Graylock and Briggsville, Mass.

   Jour. Geol., vol. 10, pp. 513-517, 2 figs., 1902.

   Describes the occurrence of recent landslips.

2. A study of the Hamilton formation of the Cayuga Lake section in central New York.

   U. S. Geol. Surv., Bull. no. 206, 112 pp., 5 pls., 3 figs., 1903.

   Describes the general geology of the Cayuga Lake region in New York and the history, correlation, and faunal zones of the Hamilton formation in this region, and gives a classified list of species found, with notes on their occurrence, general observations and conclusions, and a table showing vertical distribution and relative abundance of Hamilton species.

3. Further notes on the Calciferous (Beekmantown) formation of the Mohawk Valley, with descriptions of new species.

   Am. Pal., Bull. no. 18, pp. 31-50, 4 pls., 1903.

   Describes character, occurrence, and fossil contents of Calciferous strata in the Mohawk Valley, and gives detailed descriptions of the new species of fossils.

4. The formation of natural bridges.

   Am. Jour. Sci., 4th ser., vol. 20, pp. 119-124, 3 figs., 1905.

Clements (J. Morgan).

1. Ellipsoidal structure in the pre-Cambrian basic and intermediate rocks of the Lake Superior region.

   Abstract: Science, new ser., vol. 16, pp. 260-261, 1902.

2. Vermilion district of Minnesota.

   Abstract: Science, new ser., vol. 16, p. 261, 1902.

   Describes the stratigraphy and geological structure of this region and discusses the origin of the ores.

3. The Vermilion iron-bearing district of Minnesota.

   U. S. Geol. Surv., Mon., vol. 45, 463 pp., 13 pls., 23 figs., with an atlas of 26 sheets, 1903.

   Reviews the literature regarding the district, describes its physiography, the character, occurrence, and relations of the Archæan, Huronian, and Keweenawan rocks and drift, and the occurrence, character, and origin of the ore deposits.

4. Ellipsoidal structure in pre-Cambrian rocks of Lake Superior region.

   Abstract: Geol. Soc. Am., Bull., vol. 14, p. 8, 1903.

5. Vermilion district of Minnesota.

   Abstract: Geol. Soc. Am., Bull., vol. 14, p. 9, 1903.

   Gives a brief outline of the geology.

6. Spherulitic texture in the Archean greenstones of Minnesota.

   Abstract: Geol. Soc. Am., Bull., vol. 14, p. 555, 1904.

7. Geological history of the Vermilion iron-bearing district of Minnesota.

   Abstract: Geol. Soc. Am., Bull., vol. 14, p. 555, 1904.

Clements (J. Morgan), **Van Hise** (C. R.) and.

1. The Vermilion iron-bearing district.

   See **Van Hise** (C. R.) and **Clements** (J. M.), 1.

Clendenin (W. W.).

1. A preliminary report upon the Florida parishes of east Louisiana and the bluff, prairie, and hill lands of southwest Louisiana.

   La. State Experiment Stations, Geol. & Agric., pt. 3, pp. 159-256 [1896?].

   Describes topographic, drainage and geologic features, soils, and other economic resources of this area.

2. A preliminary report upon the bluff and Mississippi alluvial lands of Louisiana.

   La. State Experiment Stations, Geol. & Agric., pt. 4, pp. 257-290 [1897?].

   Describes physiographic features and soils of this area.

Clere (M.).

1. The Moctezuma district, Mexico.

   Eng. & Mg. Jour., vol. 79, pp. 1007-1009, 3 figs., 1905.

   Contains notes on the geology of the district, and the occurrence of the silver and gold ore deposits.

Cobb (Collier).

1. Origin of the sandhill topography of the Carolinas.

Abstract: Science, new ser., vol. 17, pp. 226-227, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

2. Recent changes in the North Carolina coast, with special reference to Hatteras Island.

Abstract: Science, new ser., vol. 17, p. 227, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

3. A new Palæotrochis locality, with some notes on the nature of Palæotrochis.

Elisha Mitchell Sci. Soc., Jour., vol. 20, pp. 11-12, 1904.

4. The forms of sand-dunes as influenced by neighboring forests.

Elisha Mitchell Sci. Soc., Jour., vol. 20, p. 14, 1904.

Cockerell (T. D. A.).

1. A new fossil Ashmunella.

Nautilus, vol. 16, p. 105, 1903.

2. A fossil form of Orohelix yavapai Pilsbry.

Nautilus, vol. 19, pp. 46-47, 1905.

3. Two Carboniferous genera.

Am. Geol., vol. 36, p. 330, 1905.

Calls attention to two generic names that are preoccupied.

Cohen (E.).

1. Über ein neues Meteoreisen von Locust Grove, Henry Co., Nord-Carolina, Vereinigte Staaten.

Preus. Akad. d. Wissen. zu Berlin, Sitzungsb., pp. 76-81, 1897.

Describes the character and constitution of this meteorite.

2. Das Meteoreisen von Forsyth Co., Georgia, Vereinigte Staaten.

Preus. Akad. d. Wissen. zu Berlin, Sitzungsb., pp. 386-396, 2 figs., 1897.

Describes the occurrence, characters, and constitution of this meteorite from Forsyth County, Georgia.

3. Über das Meteoreisen von Cincinnati, Vereinigte Staaten.

Preus. Akad. d. Wissen. zu Berlin, Sitzungsb., pp. 428-430, 1898.

Describes the characters and constitution of this meteorite.

4. Meteoreisen-Studien. XI.

K. k. naturh. Hofmuseums, Ann., Bd. 15, pp. 351-391, 1900.

Describes meteorites from Illinois Gulch, Mont.: Hammond, Wis.; Cacaria, Mex.; Mesquital, Mex.; Murphy, N. C.; Saint Francois County, Mo.; Cosby's Creek, Tenn.; Canyon Diablo, Ariz.; Kendall County, Tex., and Mount Joy, Pa.

5. Die Meteoreisen von Ranchito und Casas Grandes [Mexico].

Mittheilungen des Naturwissenschaftlichen Vereins für Neu-Vorpommern und Rügen zu Greifswald, Jahrg. 35, 13 pp., 1903.

Describes occurrence, characters, and composition of meteorites from Mexico.

6. Die Meteoreisen von Nenntmannsdorf und Persimmon Creek; Unterscheidung von Cohenit und Schreibersit.

Mittheilungen des Naturwissenschaftlichen Vereins für Neu-Vorpommern und Rügen zu Greifswald, Jahrg. 35, 4 pp., 1903.

Describes occurrence and characters of a meteorite found in North Carolina.

7. Das Meteoreisen von Millers Run bei Pittsburgh, Alleghany Co., Pennsylvania, Vereinigte Staaten.

Mittheilungen des Naturwissenschaftlichen Vereins für Neu-Vorpommern und Rügen zu Greifswald, Jahrg. 35, 4 pp., 1903.

Describes occurrence and characters of a meteorite from Pennsylvania.

8. Ueber die Meteoreisen von Cuernavaca und Iredell.

Mittheilungen des Naturwissenschaftlichen Vereins für Neu-Vorpommern und Rügen zu Greifswald, Jahrg. 34, 5 pp., 1902.

Describes occurrence, characters, and composition of meteorites from Mexico and Texas.

Colburn (E. A.).

1. A peculiar ore deposit.

Mg. & Sci. Press, vol. 88, p. 196, 1904.

Describes the occurrence, character, and geologic relations of ore bodies.

Cole (A. D.).

1. Clarence L. Herrick.

Science, new ser., vol. 20, pp. 600-601, 1904.

Cole (Leon J.).

1. The delta of the St. Clair River.

Mich. Geol. Surv., vol. 9, pt. 1, pp. 1-28, 4 pls., 1903.

Coleman (Arthur P.).

1. Glacial and inter-Glacial beds near Toronto [Canada].

Jour. Geol., vol. 9, pp. 285-310, 2 figs., 1901.

Describes the glacial history, the variations in climate and their effect on the then existing faunas and floras, and the glacial deposits of the region.

2. Marine and fresh-water beaches of Ontario.

Geol. Soc. Am., Bull., vol. 12, pp. 129-146, 2 figs., 1901. Abstract: Science, new ser., vol. 13, p. 136, 1901.

Describes the marine deposits, shell gravels, aud beaches of the region.

3. The Vermilion River placers [Ontario].

Ontario Bureau of Mines, Rept. for 1901, pp. 151-159, 1 fig., 1901.

Describes the character and distribution of the placers.

4. Iron ranges of the Lower Huronian [Ontario].

Ontario Bureau of Mines, Rept. for 1901, pp. 181-211, 4 pls., 1901.

Describes the character and occurrence of the iron-ore bodies of various localities, and the petrographic characters of some of the associated rocks. Discusses the origin of some of the ores and includes notes on the Pleistocene geology.

5. Sea beaches of eastern Ontario.

Ontario Bureau of Mines, Rept. for 1901, pp. 215-227, 2 pls., 1901.

Contains notes on the Leda clay and Saxicava sand, and describes the character and occurrence of the beach sands and gravels and their faunas.

6. The classification of the Archæan.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 135-148, 1902.

Reviews the work upon the Archean and the differences of interpretation, and compares and discusses the different schemes of classification proposed.

7. Types of iron-bearing rocks in Ontario.

Eng. & Mg. Jour., vol. 74, p. 842, 1902.

8. Nepheline and other syenites near Port Coldwell, Ontario.

Am. Jour. Sci., 4th ser., vol. 14, pp. 147-155, 1902.

Describes the megascopic and microscopic characters of these rocks.

9. The duration of the Toronto inter-Glacial period.

Am. Geol., vol. 29, pp. 71-80, 1902.

Reviews a recent paper by Upham and discusses the evidences indicating the duration of this period.

10. The Huronian question.

Am. Geol., vol. 29, pp. 327-334, 1902.

Discusses the relations of the Huronian rocks and the views of various geologists regarding these questions.

11. Rock basins of Helen mine, Michipicoten, Canada.

Geol. Soc. Am., Bull., vol. 13, pp. 293-304, 1 pl., 2 figs., 1902.

Describes the topography and the occurrence and origin of the rock basins.

12. Iron ranges of northwestern Ontario.

Ont. Bureau of Mines, Rept. for 1902, pp. 128-151, 2 pls., 1902.

Describes geographic and geologic distribution of the iron-bearing rocks and the stratigraphic position of the ores.

13. Syenites near Port Coldwell [Ontario].

Ont. Bureau of Mines, Rept. for 1902, pp. 208-213, 2 pls., 1902.

Describes the occurrence and lithologic characters of these rocks.

14. The Sudbury [Ontario] nickel deposits.

Ontario Bur. Mines, [12th] Rept., pp. 235-299, 16 pls., 25 figs., 1903.

Describes topography and geology of the region, the occurrence of ore bodies and mining operations, and discusses the character, occurrence, and origin of the ore deposits.

Coleman (Arthur P.)—Continued.

15. Types of iron-bearing rocks in Ontario.

Eng. & Mg. Jour., vol. 75, pp. 294-295, 1903.

16. Iroquois beach in Ontario.

Geol. Soc. Am., Bull., vol. 15, pp. 347-368, 1 pl. (map), 1904.

Describes location and character of the beach in Ontario of Lake Iroquois and discusses the levels and tilting of the beach, the outlet of the lake, and its geological and time relationships.

17. The Iroquois beach in Ontario.

Ont. Bur. Mines, Rept., 1904, pt. 1, pp. 225-244, 1904.

18. The northern nickel range [Ontario].

Ont. Bur. Mines, Rept., 1904, pt. 1, pp. 192-222, 5 pls., 1904.

Describes the topography, general geology, and the occurrence, character, and geological relations of nickel and iron-ore deposits.

19. The Sudbury nickel-bearing eruptive.

Abstract: Geol. Soc. Am., Bull., vol. 15, p. 551, 1904; Science, new ser., vol. 19, p. 526, 1904; Sci. Am. Suppl., vol. 57, p. 23446, 1904; Eng. & Mg. Jour., vol. 77, p. 73, 1904.

20. Geology of the Sudbury district [Ontario].

Eng. & Mg. Jour., vol 79, pp. 189-190, 1905.

21. Theories of world building.

Can., R. Astron. Soc., Selected Papers and Proc., 1904, pp. 53-56, 1905; Sci. Am. Suppl., vol. 60, p. 24703, 1905.

Discusses the nebular and planetesimal hypotheses.

22. Glacial lakes and Pleistocene changes in the St. Lawrence Valley.

Intern. Geog. Cong., Eighth, Rept., pp. 480-486, 1905.

Coleman (Arthur P.) and **Willmott** (A. B.).

1. The Michipicoten iron region [Ontario].

Ont. Bureau of Mines, Rept. for 1902, pp. 152-185, 4 pls., 2 figs., geol. map, 1902.

Describes the topography, gives a classification of the Huronian rocks, discusses the geology and formation of the iron ores, and describes the petrology of this region.

2. The Michipicoten iron ranges [Ontario].

Toronto Univ. Studies, Geol. ser., no. 2, 47 pp., 2 maps, 1902.

Colles (George Wetmore).

1. Mica and the mica industry.

Franklin Inst., Jour., vol. 160, pp. 275-294, 3 pls., 5 figs., 1905.

Describes the characters of micas and discusses the age and origin of pegmatite dikes, the origin of the mica, and the origin and relations of the Canadian mica deposits.

Collie (George Lucius).

1. Wisconsin shore of Lake Superior.

Geol. Soc. Am., Bull., vol. 12, pp. 197-216, 2 figs., 1901.

Describes the general geology of the region, the shore formations and beach phenomena, and the characters of the wave erosion and its topography.

2. Physiography of Wisconsin.

Am. Bur. Geog., Bull., vol. 2, pp. 270-287, 9 figs., 1901.

3. Ordovician section near Bellefonte, Pennsylvania.

Geol. Soc. Am., Bull., vol. 14, pp. 407-420, 1 pl., 1903.

Describes position, character, stratigraphy, and fauna of Ordovician formations in Center County, Pennsylvania, and describes some new species of Ordovician fossils.

Collier (Arthur J.).

1. A reconnaissance of the northwestern portion of Seward Peninsula, Alaska.

U. S. Geol. Surv., Professional Paper no. 2, 70 pp., 12 pls., 1902.

Describes the geology and physiography of this region and gives notes on the petrology and the occurrence of gold and tin.

2. The coal resources of the Yukon, Alaska.

U. S. Geol. Surv., Bull. no. 218, 71 pp., 6 pls., 3 figs., 1903.

Describes the general geology and the occurrence and character of the coal deposits.

Collier (Arthur J.)—Continued.

3. The Glenn Creek gold mining district, Alaska.

U. S. Geol. Surv., Bull. no. 213, pp. 49-56, 1903.
Describes placer deposits and developments in this region.

4. Coal resources of the Yukon Basin, Alaska.

U. S. Geol. Surv., Bull. no. 218, pp. 276-284, 1903.
Describes the occurrence of coal and gives notes on the character of the coals and the mining developments.

5. Tin in the York region, Alaska.

Eng. & Mg. Jour., vol. 76, pp. 999-1000, illus., 1903.
Describes the occurrence of deposits of tin ore.

6. Coal-bearing series of the Yukon.

Abstract: Science, new ser., vol. 17, p. 668, 1903.
Discusses the geologic age of the coal-bearing formations.

7. Tin deposits of the York region, Alaska.

U. S. Geol. Surv., Bull. no. 225, pp. 154-167, 1 fig., 1904.
Describes the general geology, and occurrence and character of stream and lode tin deposits.

8. The tin deposits of the York region, Alaska.

U. S. Geol. Surv., Bull. no. 229, 61 pp., 6 pls., 5 figs., 1904.
Describes the general geology, the character and occurrence of sedimentary rocks of Silurian age and igneous rocks, and the character and occurrence in detail of tin-ore deposits and the mining operations. Gives a résumé of the occurrence of tin in the United States and other parts of the world.

9. The coal fields of Cape Lisburne, Alaska.

Am. Geol., vol. 34, pp. 401-402, 1901.
Gives a brief account of the situation and geologic age of the coal fields, and the occurrence and character of the coal beds.

10. Auriferous quartz veins on Unalaska Island [Alaska].

U. S. Geol. Surv., Bull. no. 259, pp. 102-103, 1905.
Describes the general geology and the occurrence of gold-bearing quartz veins.

11. Recent development of Alaskan tin deposits.

U. S. Geol. Surv., Bull. no. 259, pp. 120-127, 1 fig., 1905.
Describes the occurrence of lode and placer tin deposits.

12. Coal fields of the Cape Lisburne region [Alaska].

U. S. Geol. Surv., Bull. no. 259, pp. 172-185, 1905.
Describes the general geology, the character and occurrence of Paleozoic and Mesozoic formations, the geology, topography, and extent of the Mesozoic and Paleozoic coal fields of this region, and the character of the coals.

Collier (Arthur J.), **Brooks** (Alfred H.) and.

1. Glacial phenomena of the Seward Peninsula [Alaska].

See **Brooks** (A. H.) and **Collier** (A. J.), 1.

Collins (Arthur L.).

1. [In discussion of "The origin of ore-deposits."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 951-953, 1902.

Collins (G. E.).

1. Vein structure at the Reynolds mine, Georgia.

Eng. & Mg. Jour., vol. 72, pp. 68-70, 11 figs., 1901; Inst. Mg. & Met., Trans., vol. 9, pp. 365-371, 5 pls., 1901.
Discusses the vein phenomena in the auriferous crystalline rocks of the region.

Collins (Henry F.).

1. Notes on the wollastonite rock mass and its associated minerals of the Santa Fe mine, State of Chiapas, Mexico.

Mineral. Mag., vol. 13, pp. 356-362, 1904.
Describes occurrence, origin, and crystallographic features of a rock mass of wollastonite.

Colton (Geo. H.).

1. A possible cause of osars.

Ohio Nat., vol. 2, p. 257, 1902.

Combes (Paul).

1. Exploration de l'ile d'Anticosti.

Paris, Joseph André et Cie., 1896. 46 pp. and map.
Contains a brief account of the geology of the island of Anticosti.

Comstock (Frank M.).

1. A small esker in western New York.

Am. Geol., vol. 32, pp. 12-14, 3 figs., 1903.

2. Ancient lake beaches on the islands in Georgian Bay.

Am. Geol., vol. 33, pp. 312-318, 2 pls., 1 fig., 1904.
Describes the occurrence and character of elevated beaches.

Comstock (Theodore B.).

1. The geology and vein phenomena of Arizona.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 1038-1101, 1 fig., 1901.
Gives a general description of the mineral regions. Discusses the orographic disturbances and their effects on ore deposition, and describes the stratigraphic succession in the state.

2. Edward Claypole, the scientist.

Am. Geol., vol. 29, pp. 1-23, 1 pl., 1902.

3. Memoir of Edward Waller Claypole.

Geol. Soc. Am., Bull., vol. 13, pp. 487-497, 1903.
Includes a list of publications.

4. Superficial blackening and discoloration of rocks, especially in desert regions.

Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 1014-1017, 1905.
Discusses the occurrence of these features and their explanation.

Comstock (W. J.), **Allen** (O. D.) and.

1. Bastnasite and tysonite from Colorado.

See **Allen** (O. D.) and **Comstock** (W. J.), 1.

Concannon (Michael).

1. Relation [regarding the discovery of the Lansing, Kansas, skeleton].

Memoirs of Exploration in the Basin of the Mississippi, vol. 7, Kansas, pp. 92-93, 1903.
Details the circumstances of the finding of the fossil human remains near Lansing, Kansas

Condon (Thomas).

1. The two islands and what came of them.

Portland, Oregon, J. K. Gill Company, 1902. 211 pp., 80 pls.
Describes the geological history of Oregon.

Condra (George Evart).

1. New Bryozoa from the Coal Measures of Nebraska.

Am. Geol., vol. 30, pp. 337-359, 8 pls., 1902.

2. The Coal Measure bryozoa of Nebraska.

Nebr. Geol. Surv. vol. 2, pt. 1, pp. 11-168, 21 pls., 1903.
Reviews literature bearing on the subject, gives list of Coal Measure bryozoa in the United States, table of geographic distribution in Nebraska, and systematic descriptions of genera and species.

3. On Rhombopora lepidodendroides Meek.

Am. Geol., vol. 31, pp. 22-24, 2 pls., 1903.
Describes characters and occurrence in the Permian of Nebraska.

4. An old Platte channel [Nebraska].

Am. Geol., vol. 31, pp. 361-369, 2 figs., 1903.
Describes situation, stratigraphic and physiographic features of the valley to which the name Todd Valley is given, and the evidences of its containing a buried channel formerly occupied by the Platte River.

5. Stratigraphic delineation of the Benton and Niobrara formations of Nebraska.

Abstract: Science, new ser., vol. 19, p. 925, 1904.

Cook (Alfred N.).

1. A new deposit of fuller's earth.

Iowa Acad. Sci., Proc. for 1903, vol. 11, pp. 135-137, 1904.
Describes the chemical composition of a specimen of fuller's earth from the Black Hills of South Dakota.

Cook (Edward H.).

1. La Mina Santa Francisca, Mexico.

Mg. Mag., vol. 11, pp. 424-429, 5 figs., 1905.
Gives notes on the geology of the region and the character and occurrence of the ores carrying principally silver.

Cooper (A. S.).

1. The origin and occurrence of petroleum in California.

Min. Ind. for 1901, pp. 505-509, fig. 1, 1901.
Describes the occurrence and character of the oil.

Cooper (J. C.).

1. Oxygen in its relation to mineralogy.

Kans. Acad. Sci., Trans., vol. 19, pp. 33-38, 1905.

Cooper (W. F.).

1. Notes on the wells, springs, and general water resources of lower Michigan.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 489-512, 1904.

2. Water supply of the Lower Peninsula of Michigan.

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 45-109, 2 pls., 1905.
Discusses the water resources of the area. Includes records of wells and borings.

3. The coal formation of Bay County [Michigan].

Mich. Miner, vol. 7, nos. 9-12, 1 pl. (map), 1905.

Corkill (E. T.).

1. Notes on the occurrences, production, and uses of mica.

Can. Mg. Inst., Jour., vol. 7, pp. 284-307, 6 figs., 1904.
Describes the occurrence and mining of mica in India, the United States, and Canada, particularly the occurrence and geologic relations of deposits in Quebec and Ontario.

2. Petroleum and natural gas [in Ontario].

Ont. Bur. Mines, Rept., 1905, vol. 14, pt. 1, pp. 89-117, 3 figs., 1905.
Reviews the various theories of the origin of petroleum and natural gas, and describes the occurrence and geologic horizon of petroleum and natural gas in Ontario, including numerous records of borings.

Corless (C. V.).

1. The Coal Creek colliery of the Crows Nest Pass Coal Co. [Canada].

Can. Mg. Rev., vol. 20, pp. 60-67, 16 figs., 1901; Can. Mg. Inst., Jour., vol. 4, pp. 155-173, 11 figs., 1901.
Gives a general description of the geologic occurrence of the coal.

2. Notes on the geology and ore deposits of southeastern British Columbia.

Can. Mg. Inst.. Jour., vol. 5, pp. 503-527, 1 pl., 1902; Can. Mg. Review, vol. 21, pp. 211-218, 1902.
Describes the geology and occurrence of ore bodies of this area.

Cornwall (H. B.).

1. Occurrence of greenockite on calcite from Joplin, Missouri.

Am. Jour. Sci., 4th ser., vol. 14, pp. 7-8, 1902.

Corss (Frederic).

1. The buried valley of Wyoming [Pennsylvania].

Wyoming Hist. & Geol. Soc., Proc. & Coll., vol. 8, pp. 42-44, 1904.
Describes the position, formation, and filling of a pre-Glacial valley at Wyoming.

Coste (Eugene).

1. Volcanic origin of natural gas and petroleum.

Eng. & Mg. Jour., vol. 75, p. 439, 1903.
Abstract from paper read before the Can. Mg. Inst., March, 1903.

Coste (Eugene)—Continued.

2. Volcanic origin of natural gas and petroleum.

Can. Mg. Inst, Jour., vol. 6, pp. 73–123, 1904.

Gives a full presentation of facts confirmatory of the theory of the volcanic origin of natural gas and petroleum.

3. The volcanic origin of oil.

Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 288–297, 1905.

4. Volcanic origin of oil.

Franklin Inst., Jour., vol. 157, pp. 443–454, 1904.

Discusses volcanic origin of oil with particular reference to the Texas-Louisiana oil district.

Courtis (W. M.).

1. [In discussion of paper by G. O. Smith and Bailey Willis on "The Clealum iron ores, Washington."]

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 1116–1117, 1901.

Gives additional analyses of these ores.

Cowan (John L.).

1. The arsenic mines at Brinton, Virginia.

Eng. & Mg. Jour., vol. 78, pp. 105–106, 2 figs., 1904.

Describes the occurrence of arsenic ores at Brinton, Virginia, and their economic development.

Cowles (Henry C.).

1. The relation between baseleveling and plant distribution.

Abstract: Science, new ser., vol. 13, pp. 372–373, 1901.

2. The influence of underlying rocks on the character of the vegetation.

Am. Bur. Geog., Bull., vol. 2, pp. 163–176, 376–388, 10 figs., 1901.

Cragin (Francis Whittemore).

1. A study of some teleosts from the Russell substage of the Platte Cretaceous series.

Colo. Coll. Studies, vol. 9, pp. 25–37, 3 pls., 1901.

2. Paleontology of the Malone Jurassic formation of Texas.

U. S. Geol. Surv., Bull., no. 266, pp. 9–22, 34–172, 29 pls., 1905.

Discusses the occurrence and geologic horizon of Jurassic fossils in the Malone Mountains region of Texas and gives systematic descriptions of the species.

Crane (W. R.).

1. Kansas coal mining.

Eng. and Mg. Jour., vol. 72, pp. 748–752, 7 figs., 1901.

Describes the distribution and characters of the coal-bearing strata.

2. The Kansas coal mines of the Missouri Valley.

Eng. & Mg. Jour., vol. 74, pp. 514–516, 1902.

Contains notes on the geologic occurrence of the coal seams.

3. Asphalt refining. Methods employed in the Tar Springs Asphalt Co.'s refinery, near Comanche, Ind. T.

Mines & Minerals, vol. 23, pp. 337–341, 4 figs., 1903.

Contains observations on the character and occurrence of asphalt deposits.

4. Coal fields of Kansas. Recent discoveries and developments in the Cretaceous formation in the northern central portion of the State.

Mines & Minerals, vol. 24, p. 94, 1 fig., 1903.

Describes the occurrence of a workable coal seam and gives a section of the strata penetrated by a shaft.

5. Coal mining in the Indian Territory—the southwestern field.

Eng. & Mg. Jour., vol. 76, pp. 577–581, 7 figs., 1903.

Describes the character and occurrence of the coal seams and the methods of mining

6. The Pratt coal mines in Alabama.

Eng. & Mg. Jour., vol. 79, pp. 177–180, 2 figs., 1905.

Describes the occurrence of coal and the geologic structure of the coal fields.

Crane (W. R.)—Continued.

7. Coal mining in Arkansas.

Eng. & Mg. Jour., vol. 80, pp., 774-777, 3 figs., 1905.
Contains notes on the occurrence and character of coal beds in western Arkansas.

Crane (W. R.), **Adams** (George I.), **Haworth** (Erasmus), and.

1. Economic geology of the Iola quadrangle, Kansas.

See **Adams** (George I.), **Haworth** (Erasmus), and **Crane** (W. R.), 1.

Crawford (J.).

1. Earthquakes in Nicaragua.

Am. Geol., vol. 29, p. 323, 1902.

2. Volcanoes and earthquakes in Nicaragua.

Am. Geol., vol. 29, p. 395, 1902.

3. List of the most important volcanic eruptions and earthquakes in western Nicaragua within historic time.

Am. Geol., vol. 30, pp. 111-113, 1902.

4. Additions to the list of Nicaragua volcanic eruptions in historic time.

Am. Geol., vol. 30, pp. 395-396, 1902.

Crevecœur (F. F.).

1. List of fossil plants collected in the vicinity of Onaga, Kans.

Kans. Acad. Sci., Trans., vol. 18, pp. 124-128, 3 figs., 1903.
Describes the stratigraphy and occurrence of fossils at this locality.

Crider (A. F.).

1. Cement resources of northeast Mississippi.

U. S. Geol. Surv., Bull. no. 260, pp. 510-521, 1905.
Gives observations upon the geologic occurrence, distribution, and character of limestones and clays, and their adaptability to the manufacture of cement.

Crider (A. F.), **Eckel** (E. C.) and.

1. Geology and cement resources of the Tombigbee River district, Mississippi-Alabama.

See **Eckel** (E. C.) and **Crider** (A. F.), 1.

Crook (Alja Robinson).

1. The mineralogy of the Chicago area.

Chicago Acad. Sci., Nat. Hist. Surv., Bull. no. 5, 57 pp., 10 pls., 21 figs., 1902.
Discusses the occurrence and composition of the minerals of this area.

2. Missouri lead and zinc regions visited by the Geological Society of America.

Science, new ser., vol. 19, pp. 197-198, 1904.
Describes the occurrence of ore deposits.

3. Molybdenite at Crown Point, Washington.

Geol. Soc. Am., Bull., vol. 15, pp. 283-288, 2 pls., 1904.
Describes the occurrence, relations to surrounding rocks, and character of molybdenite ore at Crown Point, Washington.

Crosby (William O.).

1. The tripolite deposits of Fitzgerald Lake, near St. John, New Brunswick

Tech. Quart., vol. 14, pp. 124-127, 1901.
Describes the character and origin of the deposit.

2. Geological history of the hematite iron ores of the Antwerp and Fowler belt in New York.

Tech. Quart., vol. 14, pp. 162-170, 4 figs., 1901; Am. Geol., vol. 29, pp. 233-242, 2 figs., 1902.
Describes the character, occurrence, and origin of the hematite ores of the region.

3. The origin of eskers.

Am. Geol., vol. 30, pp. 1-38, 1902; Boston Soc. Nat. Hist., Proc., vol. 30, pp. 375-411, 1902.
Describes the characteristics of eskers, discusses the hypotheses as to their origin, and reviews the evidence that has been heretofore presented.

Crosby (William O.)—Continued.

4. Origin and relations of the auriferous veins of Algoma [western Ontario].

Tech. Quart., vol. 15, pp. 161-180, 8 figs., 1902.

Presents the author's observations in the region, reviews Dr. Coleman's conclusions, and discusses the origin of these auriferous veins.

5. A study of hard-packed sand and gravel.

Tech. Quart., vol. 15, pp. 260-263, 1902.

Describes the character of the glacial gravels and gives the results of penetration tests.

6. The hanging valleys of Georgetown, Colorado.

Am. Geol., vol. 32, pp. 42-48, 3 pls., 1903; Tech. Quart., vol. 16, pp. 41-50, 4 figs., 1903.

Describes certain geographic and physiographic features and discusses their origin.

7. A study of the geology of the Charles River estuary and Boston Harbor, with special reference to the building of the proposed dam across the tidal portion of the river.

Tech. Quart., vol. 16, pp. 64-92, 1903.

Describes the geologic formations of the vicinity, the bedded rock and glacial deposits, and the processes and conditions of sedimentation prevailing now and in the recent past.

8. Structure and composition of the delta plains formed during the Clinton stage in the Glacial lake of the Nashua Valley.

Tech. Quart., vol. 16, pp. 240-254, 9 figs., map, 1903.

9. Notes on the wells, springs, and general water resources of Rhode Island.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 119-125, 1904.

10. Memoir of Alpheus Hyatt.

Geol. Soc. Am., Bull., vol. 14, pp. 504-512, pl. 64 (por.), 1904.

Includes a list of papers published by the subject of the memoir.

11. Structure and composition of the delta plains formed during the Clinton stage in the Glacial lake of the Nashua Valley. [Continuation.]

Tech. Quart., vol. 17, pp. 37-75, 3 pls., 17 figs., 1904.

Describes the structure and process of building of Glacial delta plains and the character and occurrence of various Glacial deposits, and discusses their origin.

12. Geology of the Weston aqueduct of the Metropolitan waterworks in Southboro, Framingham, Wayland, and Weston, Massachusetts.

Tech. Quart., vol. 17, pp. 101-116, 1 fig., 1904.

Describes the character and occurrence of the rocks in the tunnels of the Weston aqueduct and discusses their geologic relations and their age.

13. Water supply from the delta type of sand plain.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 161-178, 2 pls., 3 figs., 1905.

Includes an account of the formation and structural features of sand plains.

14. Underground waters of eastern United States: Massachusetts and Rhode Island.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 68-75, 1905.

Gives a brief account of the general geology and the water supply considered by areas.

15. Genetic and structural relations of the igneous rocks of the lower Neponset Valley, Massachusetts.

Am. Geol., vol. 36, pp. 34-47, 69-83, 1905; Tech. Quar., vol. 18, pp. 386-409, 1905.

Describes the occurrence and history of the basal complex of this region, the occurrence and relations of Cambrian strata, and the occurrence, geologic relations, age, and petrographic characters of the gneissic rocks forming the batholite.

16. The limestone-granite contact deposits of Washington camp, Arizona.

Tech. Quart., vol. 18, pp. 171-190, 1905; Am. Inst. Mg. Engrs., Bi-Mo. Bull. no. 6, pp. 1217-1238, 1905.

Describes the general geology, the character, occurrence, and origin of the ore deposits, yielding chiefly copper, and the metamorphism of the contact rocks.

Crosby (William O.) and **La Forge** (Lawrence).

1. Notes on the wells, springs, and general water resources of Massachusetts.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 94-117, 1904.

Crosby (William O.) and **Loughlin** (G. F.).

1. A descriptive catalogue of the building stones of Boston and vicinity.

Tech. Quart., vol. 17, pp. 165-185, 1904.

Describes the geologic and geographic occurrence, character, and use in Boston of various building stones.

Cross (Charles Mortimer).

1. The underground water circulation.

Ores and Metals, vol. 13, no. 15, pp. 21, 37-38; no. 16, p. 22, 1904.

Discusses ore deposition by circulating waters.

Cross (Whitman).

1. Outline of geology. (Silverton quadrangle, Colorado.)

U. S. Geol. Surv., Bull. no. 182, pp. 29-39, 1901.

Describes the general characteristics of the sedimentary and igneous rocks and the structure of the region.

2. Geologic formations versus lithologic individuals.

Jour. Geol., vol. 10, pp. 223-244, 1902.

Reviews papers by Willis and Eckel and discusses geological formations as divisions of rock masses which should be discriminated through the consideration of all the geologic data which each contains.

3. The development of systematic petrography in the nineteenth century.

Jour. Geol., vol. 10, pp. 332-376, 451-499, 1902.

Reviews the development of the science of petrography and gives the author's summary of some of the defects of the modern classifications of igneous rocks and of the status of systematic petrography at the close of the nineteenth century.

4. Observations on Hawaiian geology.

Abstract: Science, new ser., vol. 17, p. 740, 1903.

5. A new Devonian formation in Colorado.

Am. Jour. Sci., 4th ser., vol. 18, pp. 245-252, 1904.

Describes character, occurrence, and geologic relations of Devonian strata in the San Juan region of Colorado.

6. An occurrence of trachyte on the Island of Hawaii.

Jour. Geol., vol. 12, pp. 510-523, 1 fig., 1904.

Describes the occurence and character of a trachyte rock from the Island of Hawaii, gives chemical analyses of this and allied rocks and its norm, and discusses its bearing upon the geologic history of the island, and the general significance of the occurrence.

7. Geography and general geology of the Rico quadrangle [Colorado].

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 130, 1905.

Describes the physiographic features, the occurrence, character, and relations of metamorphic and igneous rocks and of Algonkian, Cambrian, Devono-Carboniferous, Jurassic, and Cretaceous strata, and the geologic structure and history of the area.

Cross (Whitman) and **Howe** (Ernest).

1. Silverton folio, Colorada. Geography and general geology of the quadrangle.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio no. 120, 1905.

Gives an outline sketch of the physical history and general geology, describes the occurrence, character, and relations of Archean, Algonkian, Cambrian, Devonian, Carboniferous, and Tertiary rocks, of Quaternary deposits, and of eruptive rocks, and the physiography and geologic history and structure, and discusses in detail the petrology of the quadrangle.

2. Red Beds of southwestern Colorado and their correlation.

Geol. Soc. Am., Bull., vol. 16, pp. 447-498, 4 pls. and 4 figs., 1905.

Discusses the occurrence, character, and relations of strata, collectively called Red Beds, in southwestern Colorado, their subdivisions and correlation with Red Beds elsewhere.

3. Topography and general geology of the Needle Mountains quadrangle [Colorado].

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 131, 1905.

Describes the physiographic features, the occurrence, character, and relations of metamorphic and igneous rocks and of Algonkian, Cambrian, Devonian, Carboniferous, and Tertiary strata, and the geologic structure and history of the area.

4. The Red Beds of southwestern Colorado.

Abstract: Science, new ser., vol. 21, p. 319, 1905.

Cross (Whitman), **Iddings** (Joseph P.), **Pirsson** (Louis V.), and **Washington** (Henry S.).

1. A quantitative chemico-mineralogical classification and nomenclature of igneous rocks.

   Jour. Geol., vol. 10, pp. 555-690, 1902.

   Gives a general summary of the new system and describes the classification and nomenclature proposed. Includes chemical analyses and tables of alferic minerals and the rocks in which they occur.

2. Quantitative classification of igneous rocks based on chemical and mineral characters, with a systematic nomenclature.

   University of Chicago Press, 286 pp., 1903.

   A review of the development of systematic petrography in the nineteenth century, by Whitman Cross, is followed by a discussion of the principles of classification of igneous rocks and an exposition of the new system of classification and nomenclature proposed by the authors and methods of calculation for determining the position of a rock in their system of classification.

Cross (Whitman), assisted by Arthur Coe Spencer.

1. General geology, La Plata folio, Colorado.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 60, 1899.

   Describes the geographic and physiographic features, the character and occurrence of the Juratrias, Cretaceous, Eocene, and Pleistocene strata and igneous rocks, and the geological structure. Includes a statement of the general geologic problems of the region.

Crowther (Henry M.).

1. The copper deposits of the Beaver River Range, Utah.

   Eng. & Mg. Jour., vol. 75, p. 965, 1903.

   Describes the geologic structure and the occurrence of the ores.

Culbert (M. T.).

1. The iron belt west of Hutton [Ontario].

   Ont. Bur. Mines, Rept., 1904, pt. 1, pp. 222-224, 4 pls., 1904.

   Gives observations upon the geology of the region traversed and the occurrence of iron ores

Culbertson (Glenn).

1. Ripple marks in Hudson limestone of Jefferson County, Indiana.

   Ind. Acad. Sci., Proc., 1902, pp. 202-205, 1903.

Cumings (Edgar Roscoe).

1. The use of Bedford as a formational name.

   Jour. Geol., vol. 9, pp. 232-233, 1901.

   Proposes the name Salem limestone for the Bedford limestone, the latter having been preoccupied.

2. Orthothetes minutus, n. sp. from the Salem limestone of Harrodsburg, Indiana.

   Am. Geol., vol. 27, pp. 147-149, 1 pl., 1901.

3. A section of the upper Ordovician at Vevay, Indiana.

   Am. Geol., vol. 28, pp. 361-380, 2 pls., 1901.

   Gives a detailed section, names the fossils found in each bed, and compares this section with that at Cincinnati. Describes four new species.

4. Notes on the Ordovician rocks of southern Indiana.

   Ind. Acad. Sci., Proc. for 1900, pp. 200-215, 1901.

   Gives section at various localities with notes on the faunas.

5. Some developmental stages of Orthothetes minutus n. sp.

   Ind. Acad. Sci., Proc. for 1900, pp. 216-218, 1901.

6. Lower Silurian system of eastern Montgomery County, New York.

   N. Y. State Mus., Bull., no. 34 [also in 54th Ann. Rept., vol. 1], pp. 418-468, 4 pls., 1 fig., 5 cross sections, geol. map, 1902.

7. A revision of the Bryozoan genera Dekayia, Dekayella, and Heterotrypa of the Cincinnati group.

   Am. Geol., vol. 29, pp. 197-218, 4 pls., 1902.

   Reviews the literature on these genera and describes new species.

Cumings (Edgar Roscoe)—Continued.

8. The morphogenesis of Platystrophia; a study of the evolution of a Paleozoic brachiopod.

Am. Jour. Sci., 4th ser., vol. 15, pp. 1-48, 121-136, 27 figs., 1903.

9. Development of some Paleozoic bryozoa.

Am. Jour. Sci., 4th ser., vol. 17, pp. 49-78, 83 figs., 1904.
Describes development stages in recent bryozoa and in the fossil genera Fenestella, Unitrypa, and Polypora.

10. Development of Fenestella.

Am. Jour. Sci., 4th ser., vol. 20, pp. 169-177, 3 pls., 1905.

11. Development and morphology of Fenestella.

Abstract: Am. Geol., vol. 35, pp. 50-51, 1905.

Cumings (Edgar R.) and **Mauck** (A. V.).

1. A quantitative study of variation in the fossil brachiopod Platystrophia lynx.

Am. Jour. Sci., 4th ser., vol. 14, pp. 9-16, 2 pls., 1902.

Cumings (Edgar R.), **Prosser** (Charles S.) and.

1. The Waverly formations of central Ohio.

See **Prosser** (Charles S.) and **Cumings** (Edgar R.), 1.

Cummings (William N.).

1. The Hostotipaquillo district, Jalisco [Mexico].

Eng. & Mg. Jour., vol. 79, pp. 942-943, 1 fig., 1905.
Contains notes on the geology of the district.

Currie (P. W.).

1. On the ancient drainage at Niagara Falls.

Can. Inst., Trans., vol. 7, pp. 7-14, 6 pls., 1901.
Describes the course of the pre-Glacial river and discusses its mode of formation.

Curtis (George Carroll).

1. Secondary phenomena of the West Indian volcanic eruptions of 1902.

Jour. Geol., vol. 11, pp. 199-215, 12 figs., 1903.
Describes phenomena connected with volcanic eruptions of 1902 in the West Indies and discusses the character and cause of the eruptions within stream valleys.

2. Note on the West Indian eruptions of 1902.

Am. Geol., vol. 31, pp. 40-43, 1903.
Describes and gives an explanation of eruptions in stream beds.

3. Modern rational relief of the earth's surface.

Am. Geol., vol. 32, pp. 178-182, 2 figs., 1903.

4. Evidence of recent differential movement along the New England coast.

Abstract: Science, new ser., vol. 19, pp. 522-523, 1904.

Cushing (H. P.).

1. Origin and age of an Adirondack augite andesite.

Abstract: Geol. Soc. Am., Bull., vol. 12, p. 464, 1901; Science, new ser., vol. 13, p. 100, 1901.
Brief description of character and occurrence.

2. Geology of Rand Hill and vicinity, Clinton County [New York].

N. Y. State Mus., 53d Ann. Rept., vol. 1, pp. r45-r82, and geologic map, 1901.
Describes the geologic history of the region, and the pre-Cambrian and Paleozoic rocks.

3. Recent geologic work in Franklin and St. Lawrence counties [New York].

N. Y. State Mus., 54th Ann. Rept., vol. 1, pp. r23-r82, 7 pls., 1902.
Discusses topography, geologic structure, and petrology of the area.

4. Pre-Cambrian outlier at Little Falls, Herkimer County [New York].

N. Y. State Mus., 54th Ann. Rept., vol. 1, pp. r83-r95, 1902.
Describes exposures and microscopic and chemical characters of rocks.

5. The derivation of the rock name "anorthosite."

Am. Geol., vol. 29, pp. 190-191, 1902.
Discusses the use of the name.

Cushing (H. P.)—Continued.

6. Accessions to the library [of the Geological Society of America] from June, 1901, to June, 1902.

   Geol. Soc. Am., Bull., vol. 13, pp. 547–556, 1903.

7. Petrography and age of the Northumberland rock.

   N. Y. State Mus., 55th Ann. Rept., pp. r24–r29, 1903.

   Describes the petrologic characters and discusses the correlation of the igneous rock discovered near Schuylerville, New York.

8. Memoir of Peter Neff.

   Geol. Soc. Am., Bull., vol. 15, pp. 541–544, 1 pl. (port.), 1904.

9. Geology of the vicinity of Little Falls, Herkimer County [New York].

   N. Y. State Mus., Bull. 77, 95 pp., 15 pls., 14 figs., and 2 maps and sections sheet (in pocket), 1905.

   Describes the character, occurrence, and relations of pre-Cambrian, Cambrian, and Ordovician strata, the geologic structure, the topography, glacial deposits, and petrography of the pre-Cambrian rocks.

10. Geology of the northern Adirondack region.

   N. Y. State Mus., Bull., 95, pp. 271–453, 18 pls., 9 figs., 1905.

   Describes the geologic history of the region; the character, occurrence, and geologic relations of pre-Cambrian igneous and metamorphosed rocks of Cambrian and Ordovician sedimentary deposits, and of Paleozoic igneous rocks; and the geologic structure.

Cushman (Joseph A.).

1. A new footprint from the Connecticut Valley.

   Am. Geol., vol. 33, pp. 154–156, 1 pl., 1904.

2. Pleistocene foraminifera from Panama.

   Am. Geol., vol. 33, pp. 265–266, 1904.

   Describes occurrence and gives a list of species identified, with notes as to the occurrence of living forms of the same species.

3. Notes on the Pleistocene fauna of Sankaty Head, Nantucket, Mass.

   Am. Geol., vol. 34, pp. 169–174, 1904.

   Gives a section of the strata and a table showing the occurrence of the fossils in the various beds, and discusses the relations of these faunas.

4. Miocene barnacles from Gay Head, Mass., with notes on Balanus proteus, Conrad.

   Am. Geol., vol. 34, pp. 293–296, 3 figs., 1904.

5. Notes on fossils obtained at Sankaty Head, Nantucket, in July, 1905.

   Am. Geol., vol. 36, pp. 194–195, 1905.

6. Fossil crabs of the Gay Head Miocene.

   Am. Nat., vol. 39, pp. 381–390, 2 pls., 1905.

   Discusses the occurrence of fossil crabs at this locality, and gives descriptions of two species.

D.

Dale (T. Nelson).

1. Structural details in the Green mountain region [Vermont] and in eastern New York (Second paper).

   U. S. Geol. Surv., Bull. no. 195, 22 pp., 4 pls., 8 figs., 1902.

   Discusses geologic phenomena presented in this area.

2. The slate industry at Slatington, Pa., and Martinsburg, W. Va.

   U. S. Geol. Surv., Bull. no. 213, pp. 361–364, 1903.

   Describes the character and occurrence of the slates at these localities.

3. The geology of the north end of the Taconic Range.

   Am. Jour. Sci., 4th ser., vol. 17, pp. 185–190, 1 pl. (map), 1904.

   Describes the areal distribution and structural relations of Cambrian and Ordovician formations in the area and gives an explanation of these facts.

4. Note on Arkansas roofing slates.

   U. S. Geol. Surv., Bull. no. 225, pp. 414–416, 1904.

   Describes the occurrence and megascopic and microscopic characters.

Dale (T. Nelson)—Continued.

5. Geology of the Hudson Valley between the Hoosic and the Kinderhook.

U. S. Geol. Surv., Bull. no. 242, 63 pp., 3 pls., and 17 figs., 1904.

Describes the occurrence, general and petrographical characters, and geologic structure and relations of lower Cambrian, Ordovician, and Silurian strata, and the general geologic structure and history of this region.

6. Note on the geological relations of the Brandon lignite deposit.

Vt. Geol. Surv., Rept. State Geol., IV, pp. 163–165, 1 fig., 1904.

7. Water resources of Fort Ticonderoga quadrangle, Vermont and New York.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 126–129, 1905.

8. Slate investigations during 1904.

U. S. Geol. Surv., Bull. no. 260, pp. 486–488, 1905.

Describes the occurrence and quarrying of slate in Maine, Vermont, Pennsylvania, Maryland, Virginia, and West Virginia.

9. Taconic physiography.

U. S. Geol. Surv., Bull. no. 272, 52 pp., 14 pls., 3 figs., 1905.

Reviews papers giving descriptions of the physiography of the region occupied by the Taconic Mountains in western New England, describes in detail the physical characters of the underlying rocks and the various physiographic features, and discusses the origin of the latter and their relations to the underlying rocks.

Dall (William Healey).

1. The structure of Diamond Head, Oahu.

Am. Geol., vol. 27, pp. 386–387, 1901.

2. The morphology of the hinge teeth of bivalves.

Am. Nat., vol. 35, pp. 175–182, 1901.

3. A gigantic fossil Lucina.

Nautilus, vol. 15, pp. 40–42, 1901.
Describes Lucina megameris from Jamaica.

4. A new Lyropecten.

Nautilus, vol. 14, pp. 117–118, 1901.

5. Alpheus Hyatt.

Pop. Sci. Mo., vol. 60, pp. 439–441, por., 1902.
Gives a sketch of the life and work of Professor Hyatt.

6. The Grand Gulf formation.

Science, new ser., vol. 16, pp. 946–947, 1902.
Discusses the age of this formation.

7. On the true nature of Tamiosoma.

Science, new ser., vol. 15, pp. 5–7, 1902.

8. Contributions to the Tertiary fauna of Florida, with especial reference to the silex beds of Tampa and the Pliocene beds of the Caloosahatchie River, including a complete revision of the generic groups treated of and their American Tertiary species. Part VI. Concluding the work.

Wagner Free Inst. Sci. Phila., Trans., vol. 3, pp. 1219–1654, 13 pls., 1903.

Gives systematic descriptions of the fauna, including emendatory notes upon the previous parts of the work, and describes the geologic history of the region, and the character, occurrence, and faunal features of the several Tertiary formations.

9. The Grand Gulf formation.

Science, new ser., vol. 18, pp. 83–85, 1903.
Discusses stratigraphic position and geologic age of the Grand Gulf formation.

10. Neozoic invertebrate fossils. A report on collections made by the [Harriman Alaska] expedition.

Harriman Alaska Expedition, vol. 4, pp. 99–122, 2 pls., 1904.

Gives systematic descriptions of Eocene fossils from Alaska Peninsula and of Miocene fossils from the Shumagin Islands, and a list of Pleistocene fossils from Douglas Island, and describes the localities from which fossils were obtained.

Dall (William Healey)—Continued.

11. On the geology of the Hawaiian Islands.

Am. Jour. Sci., 4th ser., vol. 17, p. 177, 1904.

A note in regard to the explanation of certain geologic formations on the Island of Oahu.

12. A singular Eocene Turbinella.

Nautilus, vol. 18, pp. 9–10, 1904.

13. An historical and systematic review of the frog shells and tritons.

Smith. Misc. Coll., vol. 47 (Quart. Issue, vol. 2, no. 1), pp. 114–144, 1904.

Includes observations on Tertiary forms.

14. The relations of the Miocene of Maryland to that of other regions and to the recent fauna.

Md. Geol. Surv., Miocene, pp. cxxxix–clv, 1904. Abstract: Science, new ser., vol. 19, pp. 502–503, 1904.

15. Fossils of the Bahama Islands, with a list of the nonmarine mollusks.

Baltimore Geog. Soc.: The Bahama Islands, pp. 23–47, 3 pls., 1905. (New York, The MacMillan Company, 1905.)

Discusses the occurrence and relations of the fossil land shells, gives systematic descriptions of a number of forms and a list of all known forms, and discusses the character of the marine fossil fauna and that of the "salt pans."

16. Notes on the fossils of the Bahamas.

Abstract: Science, new ser., vol. 21, pp. 390–391, 1905.

17. [The time element in stratigraphy and correlation.]

Abstract: Science, new ser., vol. 21, pp. 584–585, 1905.

Dall (William Healey) and **Bartsch** (Paul).

1. A new Californian Bittium.

Nautilus, vol. 15, pp. 58–59, 1901.

2. Synopsis of the genera, subgenera, and sections of the family Pyramidellidæ.

Wash. Biol. Soc., Proc., vol. 17, pp. 1–16, 1904.

Includes a description of a new species from the Oligocene of Florida.

Daly (Reginald Aldworth).

1. The physiography of Acadia.

Harv. Coll., Mus. Comp. Zool., Bull., vol. 38, pp. 73–103, 11 pls., 1901. Abstract: Am. Geol., vol. 27, pp. 317–318, 1901.

Describes the characteristics of the several plateau and lowland areas and their origin.

2. Notes on oceanography.

Science, new ser., vol. 13, pp. 951–954, 1901.

Discusses phenomena of marine currents and river deflection.

3. The geology of the northeast coast of Labrador.

Harv. Coll., Mus. Comp. Zool., Bull., vol. 38, pp. 205–270, 13 pls., 4 figs., 1902.

Gives an account of geologic and topographic observations made along the coast of Labrador.

4. The geology of the region adjoining the western part of the International Boundary.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 37–49, 1902.

Describes the author's observations in the southern part of British Columbia.

5. Report on geology. In report of the Brown-Harvard expedition to Nachvak, Labrador, in the year 1900.

Phila. Geog. Soc., Bull., vol. 3, pp. 206–208, 1902.

Gives observations on the geology of Labrador.

6. Geology of the western part of the international boundary (49th parallel).

Can. Geol. Surv., Summ. Rept. for 1902, pp. 136–147, 1903.

Describes physiographic features and general geology of the region.

7. The geology of Ascutney Mountain, Vermont.

U. S. Geol. Surv., Bull. no. 209, 122 pp., 7 pls., 1 fig., 1903.

Describes physiography and general geology, and the character and occurrence of metamorphic and eruptive rocks, and discusses their origin.

Daly (Reginald Aldworth)—Continued.

8. The mechanics of igneous intrusion.

Am. Jour. Sci., 4th ser., vol. 15, pp. 269-298; vol. 16, pp. 107-126, 3 figs., 1903.
Discusses origin of igneous rocks.

9. Variolitic pillow lava from Newfoundland.

Am. Geol., vol. 32, pp. 65-78, 2 pls., 3 figs., 1903.
Describes occurrence and character of pillow lava and discusses origin of variolite and pillow structure.

10. Geology of the International Boundary.

Can. Geol. Surv., Summ. Rept. for 1903, pp. 91-100, 1904.

11. The secondary origin of certain granites.

Am. Jour. Sci., 4th ser., vol. 20, pp. 185-216, 5 figs., 1905.

12. The classification of igneous intrusive bodies.

Jour. Geol., vol. 13, pp. 485-508, 9 figs., 1905.

13. Geology of the western part of the international boundary (49th parallel).

Can. Geol. Surv., Summ. Rept. for 1904, pp. 91-100, 1905.

14. Machine-made line drawings for the illustration of scientific papers.

Science, new ser., vol. 22, pp. 91-93, 1905.

Dana (Edward S.).

1. On the composition of the labradorite rocks of Waterville, New Hampshire.

Yale Bicentennial publications, Cont. to Mineral. and Petrog , pp. 387-390, 1901. (From Am. Jour. Sci., 3rd ser., vol. 3, pp. 48-50, 1872.)

Dana (Edward S.), **Brush** (George J.) and.

1. On a new and remarkable mineral deposit at Branchville, in Fairfield County, Connecticut; with a description of several new species occurring there. First paper.

See **Brush** (G. J.) and **Dana** (E. S.), 1.

2. Second Branchville paper.

See **Brush** (G. J.) and **Dana** (E. S.), 2.

3. Third Branchville paper.

See **Brush** (G. J.) and **Dana** (E. S.), 3.

4. Fourth Branchville paper—spodumene and the results of its alteration.

See **Brush** (G. J.) and **Dana** (E. S.), 4.

5. Fifth Branchville paper; with analyses of several manganesian phosphates, by Horace T. Wells.

See **Brush** (G. J.) and **Dana** (E. S.), 5.

Daniels (L. E.).

1. Notes on the semi-fossil shells of Posey County, Indiana.

Nautilus, vol. 19, pp. 62-63, 1905.
Gives a list of mollusca obtained from alluvial marl deposits.

Darton (Nelson Horatio).

1. Preliminary description of the geology and water resources of the southern half of the Black Hills and adjoining regions in South Dakota and Wyoming.

U. S. Geol. Surv., 21st Ann. Rept., pt. 4, pp. 497-599, 55 pls., 28 figs., 1901. Abstract: Jour. Geol., vol. 9, pp. 732-734, 1901.
Describes the character and occurrence of the Cambrian, Carboniferous, Juratrias, Cretaceous, Tertiary, and Pleistocene strata, the water and mineral resources, and the soils.

2. Comparison of stratigraphy of the Black Hills with that of the front range of the Rocky Mountains.

Abstract: Geol. Soc. Am., Bull., vol. 12, p. 478, 1901; Science, new ser., vol. 13, p. 188, 1901.

3. Catalogue of photographs belonging to the Geological Society of America.

Geol. Soc. Am., vol. 13, pp. 377-474, 1902.

4. Stratigraphy of the Big Horn Mountains.

Abstract: Science, new ser., vol. 15, p. 823, 1902.

Darton (Nelson Horatio)—Continued.

5. Preliminary list of deep borings in the United States. Part I. Alabama-Montana.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 57, 60 pp., 1902.

6. Preliminary list of deep borings in the United States. Part II. Nebraska-Wyoming.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 61, 67 pp., 1902.

7. Norfolk folio, Virginia-North Carolina.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 80, 1902.

   Describes the geographic and topographic features, the general geologic relations, and the character and occurrence of Cretaceous, Tertiary and Quaternary strata, and discusses the soils and underground waters.

8. Oelrichs folio, South Dakota-Nebraska.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 85, 1902.

   Describes geographic and topographic features, the general geologic relations and history, the characters and occurrence of Carboniferous, Juratrias, Cretaceous, Tertiary and Quaternary strata, and the economic resources.

9. Preliminary report on the geology and water resources of Nebraska west of the one hundred and third meridian.

   U. S. Geol. Surv., Professional Paper no. 17, 69 pp., 43 pls., 23 figs., 1903.

   This is a reprint of the paper with the above title in the Nineteenth Annual Report of the Director of the U. S. Geological Survey, Part IV, 1899, with a few corrections in some of the maps and a few minor changes in statements regarding geology.

10. Camp Clarke folio, Nebraska.

    U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 87, 1903.

    Describes geography, topographic features and drainage, general geologic relations, and character and occurrence of formations of Tertiary age; gives a brief geologic history of the central Great Plains region, and discusses the supplies of underground waters and irrigation.

11. Scotts Bluff folio, Nebraska.

    U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 88, 1903.

    Describes geography, topography and drainage, general geologic relations, and character and occurrence of Tertiary and Quaternary formations; gives a brief geologic history of the central Great Plains region, and discusses underground waters and irrigation.

12. Some relations of Tertiary formations of the northern Great Plains.

    Abstract: Science, new ser., vol. 17, p. 218, 1903.

13. Comparison of stratigraphy of the Big Horn Mountains, Black Hills, and Rocky Mountain front range.

    Abstract: Science, new ser., vol. 17, p. 292, 1903.

14. Newcastle folio, Wyoming-South Dakota.

    U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 107, 1904.

    Describes physiographic features, the geologic history and structure, the occurrence, character, and stratigraphic relations of Carboniferous, Triassic (?), Jurassic, and Cretaceous strata and Quaternary deposits, and the economic resources, artesian water, coal, petroleum, gypsum, etc.

15. Gypsum deposits in South Dakota.

    U. S. Geol. Surv., Bull. no. 223, pp. 76-78, 1 pl., 2 figs., 1904.

    Describes character, occurrence, and economic development of gypsum deposits in the Black Hills region.

16. Comparison of the stratigraphy of the Black Hills, Bighorn Mountains, and Rocky Mountain front range.

    Geol. Soc. Am., Bull., vol. 15, pp. 379-448, 14 pls., 1904.

    Describes in detail the occurrence, character, etc., of geologic formations of Cambrian, Ordovician, Carboniferous, Triassic, Jurassic, and Cretaceous age, and discusses their relations and correlations.

17. New York City folio, New York-New Jersey.

    See **Merrill** (F. J. H.) and others, 1.

Darton (Nelson Horatio)—Continued.

18. Preliminary report on the geology and underground water resources of the central Great Plains.

U. S. Geol. Surv., Professional Paper no. 32, 433 pp., 72 pls., 18 figs., 1905.

Describes the occurrence, character, and relations of Archean, Algonkian, Cambrian, Ordovician, Carboniferous, Triassic, Jurassic, Cretaceous strata and Tertiary deposits, the geologic history of the central Great Plains region, and the underground waters and other economic resources of the area.

19. The Zuni salt lake [Arizona].

Jour. Geol., vol. 13, pp. 185-193, 5 figs., 1905.

Describes the situation and physiographic features, and the origin and history of the lake.

20. The coal of the Black Hills, Wyoming.

U. S. Geol. Surv., Bull. no. 260, pp. 429-433, 1905.

Describes the character, occurrence, and geologic relations of coal beds, and the mining operations.

21. Zuni salt deposits, New Mexico.

U. S. Geol. Surv., Bull. no. 260, pp. 565-566, 1905.

Describes the occurrence of salt deposits in west central New Mexico.

22. Underground waters of eastern United States: Delaware.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 111-113, 1905.

Describes briefly the general geology, the water-bearing horizons, and the water supplies.

23. Age of the Monument Creek formation.

Am. Jour. Sci., 4th ser., vol. 20, pp. 178-180, 1905.

Gives an account of additional evidence for the Oligocene age of the Monument Creek formation.

24. Discovery of the Comanche formation in southeastern Colorado.

Science, new ser., vol. 22, p. 120, 1905.

25. Preliminary list of deep borings in the United States. Second edition, with additions.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 149, 175 pp., 1905.

26. Sundance folio, Wyoming-South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 127, 1905.

Describes the geography, the occurrence, character, and relations of Algonkian, Cambrian, Ordovician, Carboniferous, Triassic (?), Jurassic, Cretaceous, Tertiary, and Quaternary formations and of igneous rocks, the geologic structure and history, and the economic resources of the area.

27. Structure of the Great Plains and the mountains on their western margin.

Abstract· Science, new ser., vol. 21, p. 917, 1905.

Darton (Nelson H.) and **Fuller** (Myron L.).

1. Underground waters of eastern United States: Maryland.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 114-123, 2 pls., 1905.

Describes briefly the general geology and water-bearing horizons of the State, and particularly those of the Baltimore district.

2. Underground waters of eastern United States: District of Columbia.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 124-126, 1 pl., 1905.

Describes briefly the general geology and the water-bearing horizons and prospects.

3. Underground waters of eastern United States: Virginia.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 127-135, 1 pl., 1905.

Describes the general geology and the water horizons.

Darton (Nelson H.) and **Keith** (Arthur).

1. Washington folio, District of Columbia-Maryland-Virginia.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 70, 1901.

Describes geographic and topographic features, the character and occurrence of Archean rocks and of the Cretaceous, Eocene, Neocene, and Pleistocene strata, the general structure of the Piedmont and Coastal plain regions, and mineral resources of the area.

Darton (Nelson H.) and **O'Harra** (C. C.).

1. Aladdin folio, Wyoming-South Dakota-Montana.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 128, 1905.

Describes the geography, the occurrence, character, and relations of Cambrian, Ordovician, Carboniferous, Triassic (?), Jurassic, Cretaceous, Tertiary, and Quaternary formations and of igneous rocks, the geologic history, and the economic products.

Darton (Nelson H.) and **Smith** (W. S. Tangier).

1. Edgemont folio, South Dakota-Nebraska.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 108, 1904.

Describes the geography, topography, and drainage, the geologic history and structure of the area, the occurrence, character, and relations of Carboniferous, Triassic, Jurassic, Cretaceous, and Tertiary sedimentary strata, and the soils and water resources.

Davidson (George).

1. The glaciers of Alaska that are shown on Russian charts or mentioned in older narratives.

Geog. Soc. of Pac., Trans. & Proc., 2d ser., vol. 3, pp. 1-98, 11 pls. (maps), 1904.

Davis (C. Abbott).

1. Check-list of the minerals of Rhode Island.

Roger Williams Park Mus., Providence, R. I., Bull. no. 8, 12 pp., 1905. The Apteryx, vol. 1, pp. 59-71, 1905.

Davis (Charles A.).

1. A second contribution to the natural history of marl.

Jour. Geol., vol. 9, pp. 491-506, 1901. Abstract: Am. Geol., vol. 27, p. 186, 1901.

2. A contribution to the natural history of marl.

Mich. Geol. Surv., vol. 8, pt. 3, pp. 65-96, 1903.

Discusses sources and theories of formation, character, and composition of marl, and the rôle of Chara in marl formation.

Davis (R. O. E.).

1. Analysis of kunzite.

Am. Jour. Sci., 4th ser., vol. 18, p. 29, 1904.

Davis (William Morris).

1. An excursion to the Grand Canyon of the Colorado.

Harv. Coll., Mus. Comp. Zool., Bull., vol. 38, pp. 108-201, 2 pls., 18 figs., 1901. Abstract: Geol. Soc. Am., Bull., vol. 12, p. 483, 1901; Geol. Mag., new ser., dec. 4, vol. 8, p. 324, 1901; Science, new ser., vol. 13, p. 138, 1901.

Describes the denudation and displacements of the region and discusses the origin of the drainage system.

2. Peneplains of central France and Brittany.

Abstract: Geol. Soc. Am., Bull., vol. 12, pp. 480-487, 2 pls., 1901.

Discusses the theory of peneplains.

3. Note on river terraces of New England.

Abstract: Geol. Soc. Am., Bull., vol. 12, pp. 483-485, 1 fig., 1901.

Discuses the formation of these terraces.

4. Current notes on physiography.

Science, new ser., vol. 13, pp. 152-153, 1901.

Contains notes on the Dalles of the Wisconsin and the islands of southern California.

5. Current notes on physiography.

Science, new ser., vol. 13, pp. 275-276, 1901.

Contains abstract of paper by H. W. Turner on the origin of Yosemite Valley.

6. Current notes on physiography.

Science, new ser., vol. 13, pp. 351-352, 1901.

Contains abstracts of papers by I. C. Russell on the geology of the Cascade Mountains and by W. T. Lee on the glacier of Mt. Arapahoe.

7. Current notes on physiography.

Science, new ser., vol. 13, pp. 395-397, 1901.

Contains abstract of paper by Abbe on the physiography of Allegany County, Maryland.

Davis (William Morris)—Continued.

8. Current notes on physiography.

Science, new ser., vol. 13, pp. 471-472, 1901.
Contains abstract of paper by Ganong on the physiography of New Brunswick.

9. Current notes on physiography.

Science, new ser., vol. 13, pp. 551-552, 1901.
Contains brief abstract of paper by Lindgren, describing the Snake River canyon.

10. Current notes on physiography.

Science, new ser., vol. 13, pp. 628-629, 1901.
Contains brief abstract of monograph on the Illinois glacial lobe and describes reversion in river development in Pennsylvania.

11. Current notes on physiography.

Science, new ser., vol. 13, pp. 751-753, 1901.
Contains abstracts of second folio of the Topographic atlas of the United States and of paper by Lee on the débris-covered mesas of Boulder, Colorado.

12. Current notes on physiography.

Science, new ser., vol. 13, pp. 791-793, 1 fig., 1901.
Contains abstracts of the third folio of the Topographic atlas of the United States by R. T. Hill and of a paper by Crosby on the Nashua Valley, Massachusetts.

13. Current notes on physiography.

Science, new ser., vol. 13, pp. 871-872, 1901.
Gives an abstract of paper by Jones on the Tallulah gorge in Georgia.

14. Current notes on physiography.

Science, new ser., vol. 13, pp. 950-951, 1901.
Reviews recently published folios of the Geologic atlas of the United States.

15. Current notes on physiography.

Science, new ser., vol. 14, pp. 152-153, 1901.
Gives an abstract of a paper by Matthes on the glacial sculpture of the Big Horn Mountains.

16. Current notes on physiography.

Science, new ser., vol. 14, pp. 299-300, 1901.
Gives an abstract of paper by Shattuck on the Pleistocene problem of the North Atlantic Coastal plain.

17. Current notes on physiography.

Science, new ser., vol. 14, pp. 457-459, 1901.
Reviews paper by Spurr on the structure of the Basin ranges.

18. Current notes on physiography.

Science, new ser., vol. 14, pp. 537-538, 1901.
Contains remarks on glacial lakes in Minnesota, esker lakes in Indiana and the Ontario coast.

19. Current notes on physiography.

Science, new ser., vol. 14, pp. 698-699, 1901.
Refers to dikes as topographic features, the character of the plain of St. Lawrence Valley and the question of peneplains.

20. Current notes on physiography.

Science, new ser., vol. 14, pp. 778-779, 1901.
Reviews papers by Johnson on the High Plains and by Low on the south shore of Hudson Strait.

21. Current notes on physiography.

Science, new ser., vol. 14, pp. 856-859, 1901.
Reviews Hobbs's paper on the River system of Connecticut and Dowling and Tyrrell on Lake Winnipeg.

22. The geographical cycle.

Intern. Geogr.-Kongr., Siebenter, Verh., pt. 2, pp. 221-231, 1901.

23. La peneplaine.

Annal. de Géog., Paris, vol. 8, pp. 289-303, 385-405, 6 figs., 1899.
See no. 1387 in U. S. Geol. Surv., Bull. no. 188.

Davis (William Morris)—Continued.

24. The drainage of cuestas.

London Geol. Assoc., Proc., vol. 16, pp. 75–93, 16 figs., 1899.
Cites some American physiographic features in illustration.

25. Les enseignements du Grand Canyon du Colorado.

La Géog., Soc. de Géog., Paris, Bull., vol. 4, pp. 339–351, 4 figs., 1901.
Describes geologic and physiographic features of the Grand Canyon of the Colorado.

26. Baselevel, grade, and peneplain.

Jour. Geol., vol. 10, pp. 77-109, 1902.
Discusses the use of these words and the meanings that have been given them.

27. Field work in physical geography.

Jour. Geog., vol. 1, pp. 17-24, 62–69, 1902.
Discusses the differences between geography and geology.

28. The terraces of the Westfield River, Massachusetts.

Am. Jour. Sci., 4th ser., vol. 14, pp. 77–94, 1 pl., 5 figs., 1902.
Describes the local features of these terraces and discusses their origin.

29. River terraces in New England.

Harv. Coll., Mus. Comp. Zool., Bull., vol. 38, pp. 281–346, 42 figs., 1902.
Discusses the formation of river terraces.

30. Current notes on physiography.

Science, new ser., vol. 15, pp. 74-75, 1902.
Contains an abstract of the Washington folio of the U. S. Geological Survey.

31. The walls of the Colorado Canyon.

Abstract: Science, new ser., vol 15, p. 87, 1902.

32. The effect of the shore line on waves.

Abstract· Science, new ser., vol. 15, p. 88, 1902.

33. Current notes on physiography.

Science, new ser., vol. 15, pp. 154-156, 1902.
Contains an abstract of a paper by Hershey on the 'Geology of the central portion of the Isthmus of Panama.'

34. Current notes on physiography.

Science, new ser., vol. 15, pp. 234-235, 1902.
Contains abstracts of papers by Collie on the physiography of Wisconsin,

35. Current notes on physiography.

Science, new ser., vol. 16, pp. 636–637, 1902.
Discusses a paper by Newsom on 'Drainage of southern Indiana,' and gives an abstract of paper by Jaggar, 'The laccoliths of the Black Hills.'

36. Current notes on physiography.

Science, new ser., vol. 16, pp. 748-749, 1902.
Gives an abstract of paper by Marbut on 'The evolution of the northern part of the lowlands of southeastern Missouri.'

37. Current notes on physiography.

Science, new ser., vol. 16, pp. 914-915, 1902.
Gives an abstract of a paper by J. E. Todd on the 'Hydrographic history of South Dakota.'

38. Current notes on physiography.

Science, new ser., vol. 16, pp. 995–996, 1902.
Gives an abstract of Daly's report on 'The geology of the northeast coast of Labrador.'

39. Current notes on physiography.

Science, new ser., vol. 17, pp. 115–117, 1903.
Gives an outline of Fairchild's work on the "Pleistocene geology of western New York."

40. Current notes on physiography.

Science, new ser., vol. 17, pp. 193-195, 1903.
Discusses the physiographic divisions of Kansas.

41. Current notes on physiography.

Science, new ser., vol. 17, pp. 354-356, 1903.
Contains a discussion of abandoned channels of the Monongahela.

Davis (William Morris)—Continued.

42. Current notes on physiography.

Science, new ser., vol. 17, pp. 434-435, 1903.
Discusses overthrust mountains of northern Montana.

43. Current notes on physiography.

Science, new ser., vol. 17, pp. 550-552, 1903.
Contains observations on the physiography of the southern Appalachian region.

44. Current notes on physiography.

Science, new ser., vol. 17, pp. 672-673, 1903.
Discusses physiographic features of the Snake River lava plains in Idaho.

45. An excursion to the plateau province of Utah and Arizona.

Harvard Coll., Mus. Comp. Zool., Bull., vol. 42, pp. 1-50, 7 pls., 14 figs., 1903.
Describes physiographic features of this region.

46. The mountain ranges of the Great Basin.

Harvard Coll., Mus. Comp. Zool., Bull., vol. 42, pp. 129-177, 7 pls., 18 figs., 1903.
Discusses the explanations offered for the formation of the mountain ranges of the Great Basin, describes observations made, and reaches the conclusion that the Basin ranges are examples of dissected fault-block mountains.

47. The development of river meanders.

Geol. Mag., new ser., dec. 4, vol. 10, pp. 145-148, 1903.

48. The stream contest along the Blue Ridge.

Phila. Geog. Soc., Bull., vol. 3, pp. 213-244, 4 pls., 1903.
Describes physiographic features and stream capture in the Blue Ridge region of North Carolina.

49. Effect of shore line on waves.

Abstract: Geol. Soc. Am., Bull., vol. 13, p. 528, 1903.

50. Walls of the Colorado Canyon.

Abstract: Geol. Soc. Am., Bull., vol. 13, p. 528, 1903.
Contains brief notes.

51. The fresh-water Tertiaries at Green River, Wyoming.

Abstract: Science, new ser., vol. 17, pp. 220-221, 1903; Geol. Soc. Am., Bull., vol. 14, p. 544, 1904.

52. Block mountains of the Basin Range province.

Abstract: Science, new ser., vol. 17, p. 301, 1903; Eng. & Mg. Jour., vol. 75, p. 153, 1903; Geol. Soc. Am., Bull., vol. 14, p. 551, 1904.
Discusses the mode of their origin.

53. The relations of the earth sciences in view of their progress in the nineteenth century.

Jour. Geol., vol. 12, pp. 669-687, 1904.

54. Glacial erosion in the Sawatch Range, Colorado.

Appalachia, vol. 10, pp. 392-404, 1904.

55. The geographical cycle in an arid climate.

Jour. Geol., vol. 13, pp. 381-407, 1905.

56. Complications of the geographical cycle.

Intern. Geog. Cong., Eighth, Rept., pp. 150-163, 1905.

57. Bearing of physiography upon Suess's theories.

Abstract: Intern. Geog. Cong., Eighth, Rept., p. 164, 1905.

58. Glaciation of the Sawatch Range, Colorado.

Harvard Coll., Mus. Comp. Zool., Bull., vol. 49 (Geol. Ser., vol. 8, no. 1), pp. 1-11, 1 pl., 5 figs., 1905.
Discusses various physiographic features and their origin through glacial erosion.

59. The Wasatch, Canyon, and House ranges, Utah.

Harvard Coll., Mus. Comp. Zool., Bull., vol. 49 (Geol. Ser., vol. 8, no. 2), pp. 17-56, 3 pls., 28 figs., 1905.
Discusses the structure, physiographic features, and mode of formation of these mountains.

Davis (William Morris)—Continued.

60. Leveling without baseleveliug.

Science, new ser., vol. 21, pp. 825-828, 1905.
Discusses the formation of level plains without baseleveling.

61. [The Colorado Canyon.]

Abstract: Science, new ser., vol. 21, p. 860, 1905.

Davison (Charles).

1. A study of recent earthquakes.

London, The Walter Scott Publishing Co., 1905. xii, 355 pp., 80 figs.
Includes an account of the Charleston earthquake.

Davison (J. M.).

1. Internal structure of cliftonite.

Am. Jour. Sci., 4th ser., vol. 13, pp. 467-468, 1902.
Describes occurrence and crystallographic characters.

Dawson (George M.).

1. Summary report on the operations of the Geological Survey for the year 1898.

Can. Geol. Surv., new ser., vol. 11, Rept. A, 208 pp., 1901, published separately in 1899.

2. Geological record of the Rocky Mountain region in Canada.

Geol. Soc. Am., Bull., vol. 12, pp. 57-92, 1901.
Gives an account of the physiographic features and a table of geologic formations of the region. Describes the character and occurrence of the rocks of the subdivisions of the Archean, Paleozoic, Mesozoic, and Cenozoic eras.

3. Physical history of the Rocky Mountain region in Canada.

Science, new ser., vol. 13, pp. 401-407, 1901.
Contains portion of address delivered before the Geological Society of America.

4. Summary report on the operations of the Geological Survey of Canada for the year 1900.

Can. Geol. Surv., Summ. Rept. for 1900, 203 pp., map, 1901.

5. Summary report on the operations of the Geological Survey for the year 1899 by the Director.

Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 1A-224A, 1902.

Day (Arthur L.).

1. The study of minerals in the laboratory.

Abstract: Science, new ser., vol., 19, pp. 733-734, 1904.
Describes experiments upon the melting-point determinations of feldspars.

Day (Arthur L.) and **Allen** (E. T.).

1. The isomorphism and thermal properties of the feldspars.

Am. Jour. Sci., 4th ser., vol. 19, pp. 93-142, 1 pl. and 22 figs., 1905.

2. The isomorphism and thermal properties of the feldspars. Part I, Thermal study.

Carnegie Inst. of Wash., Publ. no. 31, pp. 13-75, 24 figs., 1905.

Day (Arthur L.) and **Shepherd** (E. S.).

1. The phase-rule and conceptions of igneous magmas. Discussion of paper by Mr. T. T. Read.

Econ. Geol., vol. 1, pp. 286-289, 1905.

Day (Arthur L.), **Becker** (G. F.) and.

1. The linear force of growing crystals.

See **Becker** (G. F.) and **Day** (A. L.), 1.

Day (David T.).

1. Notes on the occurrence of platinum in North America.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 702-708, 1901.
Describes the geographic distribution of platinum and its occurrence on the Pacific coast.

2. Experiments on the diffusion of crude petroleum through fuller's earth.

Abstract: Science, new ser., vol. 17, pp. 1007-1008, 1903.

Day (David T.)—Continued.

3. [In discussion of paper by George I. Adams, "Principles controlling the geologic deposition of the hydrocarbons."]

   Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1053-1055, 1903.

   Discusses passage of petroleum through fuller's earth, and its bearing upon the subject of Mr. Adams's paper.

4. Gypsum deposits in Florida.

   U. S. Geol. Surv., Bull. no. 223, p. 48, 1904.

   Occurrence and character of a gypsum deposit near Panasoffkee, Florida.

5. Mineral resources of the United States, 1899. Metallic products, coal and coke.

   U. S. Geol. Surv., 21st Ann. Rept., pt. 6, 656 pp., 1901.

   Contains:

   Aluminum and bauxite, pp. 267-271.
   Antimony, by Edward W. Parker, pp. 291-297.
   Coal, by Edward W. Parker, pp. 321-519.
   Coke, by Edward W. Parker, pp. 521-633.
   Copper, by Charles Kirchhoff, pp. 163-223.
   Gold and silver, pp. 119-127.
   Iron ores, by John Birkinbine, pp. 31-67.
   Iron. The American and foreign iron trades in 1899, by James M. Swank, pp. 69-118.
   Lead, by Charles Kirchhoff, pp. 225-247.
   Manganese ores, by John Birkinbine, pp. 129-162.
   Nickel and cobalt, pp. 285-289.
   Quicksilver, by Edward W. Parker, pp. 273-283.
   Tungsten, molybdenum, uranium, and vanadium, by Joseph Hyde Pratt, pp. 299-318.
   Tungsten. An occurrence of tungsten ore in eastern Nevada, by F. B. Weeks, pp. 319-320.
   Zinc, by Charles Kirchhoff, pp. 249-266.

6. Mineral resources of the United States, 1899. Nonmetallic products, except coal and coke.

   U. S. Geol. Surv., 21st Ann. Rept., pt. 6 (con.), 634 pp., 1901.

   Contains:

   Abrasive materials, pp. 463-479.
   Asbestos, by Edward W. Parker, pp. 561-564.
   Asphaltum and bituminous rock, by Edward W. Parker, pp. 319-332.
   Barytes, by Edward W. Parker, pp. 587-588.
   Cement:
      American rock cement, by Uriah Cummings, pp. 407-411.
      Portland cement, by Spencer B. Newberry, pp. 393-406.
   Clay, pp. 361-364.
   Clay and clay products at the Paris Exposition of 1900, by Heinrich Ries, pp. 365-392.
   Feldspar and quartz, by Heinrich Ries, pp. 593-596.
   Fluorspar, by Edward W. Parker, pp. 559-560.
   Fuller's earth, pp. 589-592.
   Graphite, pp. 565-568.
   Gypsum, by Edward W. Parker, pp. 523-530.
   Mica, pp. 555-558.
   Mineral paints, by Edward W. Parker, pp. 569-586.
   Mineral waters, by A. C. Peale, pp. 597-622.
   Natural gas, by F. H. Oliphant, pp. 293-318.
   Petroleum, by F. H. Oliphant, pp. 1-292.
   Phosphate rock, by Edward W. Parker, pp. 481-502.
   Precious stones, by George F. Kunz, pp. 419-462.
   Salt, by Edward W. Parker, pp. 531-554.
   Soapstone, by Edward W. Parker, pp. 413-418.
   Stone, pp. 333-360.
   Sulphur and pyrite, by Edward W. Parker, pp. 503-522.

7. Mineral resources of the United States. Calendar year 1900.

   U. S. Geol. Surv., Min. Res. of U. S. for 1900, 927 pp., 1901.

   Contains:

   Abrasive materials, by Joseph Hyde Pratt, pp. 787-801.
   Aluminum and bauxite, by Joseph Hyde Pratt, pp. 229-231.
   Antimony, by Joseph Hyde Pratt, pp. 251-255.
   Asbestos, by Joseph Hyde Pratt, pp. 861-868.

Day (David T.)—Continued.

7. Mineral resources of the United States. Calendar year, 1900—Continued.

Asphaltum and bituminous rocks, by Edward W. Parker, pp. 653-660.
Barytes, by Edward W. Parker, pp. 891-892.
Cement:
    American rock cement, by Uriah Cummings, pp. 745-746.
    Portland cement, by Spencer B. Newberry, pp. 737-744.
    Slag cement in Alabama, by Edwin C. Eckel, pp. 747-748.
Chromite, or chromic iron ore, pp. 897-898.
Clay products, by Jefferson Middleton, pp. 693-736.
Coal, by Edward W. Parker, pp. 273-457.
Coke, by Edward W. Parker, pp. 459-536.
Copper, by Charles Kirchhoff, pp. 141-190.
Flint and feldspar, p. 895.
Fluorspar, by Edward W. Parker, pp. 857-859.
Fuller's earth, pp. 893-894.
Gold and silver, by George E. Roberts, pp. 105-113.
Graphite, by Joseph Hyde Pratt, pp. 875-877.
Gypsum, by Edward W. Parker, pp. 827-833.
Iron ores, by John Birkinbine, pp. 39-67.
Iron and steel at the close of the nineteenth century, by James M. Swank, pp. 69-104.
Lead, by Charles Kirchhoff, pp. 191-211.
Lithium, pp. 239-243.
Lithographic stone, by S. J. Kübel, pp. 869-873.
Manganese ores, by John Birkinbine, pp. 115-140.
Mica, by Edward W. Parker, pp. 849-856.
Mineral paints, by Edward W. Parker, pp. 879-890.
Mineral waters, by A. C. Peale, pp. 899-905.
Natural gas, by F. H. Oliphant, pp. 629-651.
Nickel and cobalt, pp. 245-249.
Petroleum, by F. H. Oliphant, pp. 537-627.
Phosphate rock, by Edward W. Parker, pp. 803-814.
Platinum, pp. 233-234.
Precious stones, by George F. Kunz, pp. 749-778.
Quicksilver, pp. 235-238.
Salt, by Edward W. Parker, pp. 835-847.
Stone, pp. 661-692.
Sulphur and pyrite, by Edward W. Parker, pp. 815-826.
Talc and soapstone, by Joseph Hyde Pratt, pp. 779-786.
Tin. An occurrence of stream tin in the York region, Alaska, by Alfred H. Brooks, pp. 267-271.
Tungsten, molybdenum, uranium, and vanadium, by Joseph Hyde Pratt, pp. 257-265.
Zinc, by Charles Kirchhoff, pp. 213-227.

8. Mineral resources of the United States. Calendar year 1901.

U. S. Geol. Surv., Min. Res. of U. S. for 1901, 996 pp., 1902.

Contains:

Abrasive materials, by Joseph Hyde Pratt, pp. 781-809.
Aluminum and bauxite, by Joseph Struthers, pp. 225-229.
Antimony, by Joseph Struthers, pp. 251-256.
Arsenic, by Joseph Struthers, pp. 257-258.
Asbestos, by Joseph Hyde Pratt, pp. 887-895.
Asphaltum and bituminous rock, by Joseph Struthers, pp. 633-640.
Barytes, by Joseph Hyde Pratt, pp. 915-919
Bismuth, by Joseph Struthers, pp. 259-260.
Borax, by Joseph Struthers, pp. 869-872.
Bromine, by Joseph Struthers, pp. 867-868.
Cement, pp. 721-728.
Chromite or chromic iron ore, by Joseph Hyde Pratt, pp. 941-948.
Clay-working industries, by Jefferson Middleton, pp. 671-720.
Coal, by Edward W. Parker, pp. 279-449.
Coke, by Edward W. Parker, pp. 451-523.
Copper, by Charles Kirchhoff, pp. 157-198.
Flint and feldspar, by Heinrich Ries, pp. 935-939.
Fluorspar and cryolite, by Joseph Hyde Pratt, pp. 879-885.
Fuller's earth, pp. 921-934.
Gold and silver, by George E. Roberts, pp. 117-126.

Day (David T.)—Continued.

8. Mineral resources of the United States. Calendar year, 1901—Continued.

Graphite, by Joseph Struthers, pp. 897-900.
Greensand marl, by Arthur L. Parsons, pp. 823-827.
Gypsum, by Joseph Struthers, pp. 843-851.
Iron ores, by John Birkinbine, pp. 43-72.
Iron. Statistics of the American iron trade for 1901, by James M. Swank, pp. 73-115.
Lead, by Charles Kirchhoff, pp. 199-210.
Lithium, by Joseph Hyde Pratt, pp. 239-240.
Magnesite, by Joseph Struthers, pp. 959-960.
Manganese ores, by John Birkinbine, pp. 127-155.
Mica, by Joseph Hyde Pratt, pp. 873-878.
Mineral paints, by Joseph Struthers, pp. 901-914.
Mineral waters, pp. 961-966.
Monazite, by Joseph Hyde Pratt, pp. 949-954.
Natural gas, by F. H. Oliphant, pp. 613-632.
Nickel and cobalt, by Joseph Hyde Pratt, pp. 241-250.
Ores of economic importance, by Edmund O. Hovey, pp. 967-978.
Petroleum, by F. H. Oliphant, pp. 525-611.
Phosphate rock, by Joseph Struthers, pp. 811-822.
Platinum, by Joseph Struthers, pp. 231-233.
Precious stones, by George F. Kunz, pp. 729-771.
Quicksilver, by Joseph Struthers, pp. 235-238.
Salt, by Joseph Struthers, pp. 853-865.
Stone, pp. 641-670.
Strontium ores, by Joseph Hyde Pratt, pp. 955-958.
Sulphur and pyrite, by Joseph Struthers, pp. 829-842.
Talc and soapstone, by Joseph Hyde Pratt, pp. 773-780.
Titanium ores, by W. O. Snelling, pp. 271-278.
Tungsten, molybdenum, uranium, and vanadium, by Joseph Hyde Pratt, pp. 261-270.
Zinc, by Charles Kirchhoff, pp. 211-223.

9. Mineral resources of the United States. Calendar year 1902.

U. S. Geol. Surv., Min. Res. of U. S. for 1902, 1,088 pp., 1904.

Contains:

Abrasive materials, by Joseph Hyde Pratt, pp. 873-890.
Aluminum and bauxite, by Joseph Struthers, pp. 231-238.
Antimony, by Joseph Struthers, pp. 271-277.
Arsenic, by Joseph Struthers, pp. 279-282.
Asbestos, by Joseph Hyde Pratt, pp. 963-966.
Asphaltum and bituminous rock, by Joseph Struthers, pp. 657-664.
Barytes, by Joseph Hyde Pratt, pp. 945-948.
Bismuth, by Joseph Struthers, pp. 283-284.
Borax, by Joseph Struthers, pp. 891-896.
Bromine, by Joseph Struthers, pp. 897-898.
Cement. Review of cement industry in United States, by L. L. Kimball, pp. 789-812
Cement in foreign countries, pp. 777-787.
Chromite, or chromic iron ore, by Joseph Hyde Pratt, pp. 967-969.
Clay-working industries, by Jefferson Middleton, pp. 703-776.
Coal, by Edward W. Parker, pp. 289-447.
Coke, by Edward W. Parker, pp. 449-515.
Copper, by Charles Kirchhoff, pp. 163-203.
Flint and feldspar, by Heinrich Ries, pp. 971-973.
Fluorspar and cryolite, by Joseph Hyde Pratt, pp. 899-902.
Gas, coke, tar, and ammonia at gas works and in retort coke ovens, by Edward W. Parker, pp. 517-533.
Glass sand, by A. T. Coons, pp. 1007-1016.
Gold and silver, by George E. Roberts, pp. 123-131.
Graphite, by Joseph Struthers, pp. 975-982.
Gypsum, by George I. Adams, pp. 903-913.
Iron ores, by John Birkinbine, pp. 41-73.
Iron. Statistics of the American iron trade for 1902, by James M. Swank, pp. 75-99.
Iron. General statistics of iron and steel, iron ore, and coal, to the year 1901, inclusive, for five leading iron and steel producing countries, by James M. Swank, pp. 101-122.
Lead, by Charles Kirchhoff, pp. 205-216.
Lithium, by Joseph Hyde Pratt, pp. 259-261.
Magnesite, by Joseph Struthers, pp. 983-984.
Manganese ores, by John Birkinbine, pp. 133-161.

Day (David T.)—Continued.

9. Mineral resources of the United States. Calendar year 1903—Continued.
Mica, by J. A. Holmes, pp. 985–991.
Mineral paints, by Joseph Struthers, pp. 949–962.
Mineral waters, pp. 993–1002.
Monazite, by Joseph Hyde Pratt, pp. 1003–1006.
Natural gas, by F. H. Oliphant, pp. 631–655.
Nickel and cobalt, by Joseph Hyde Pratt, pp. 263–270.
Petroleum, by F. H. Oliphant, pp. 535–630.
Phosphate rock, by Joseph Struthers, pp. 915–920.
Platinum, by Joseph Struthers, pp. 239–243.
Platinum in the Rambler mine, Wyoming, by J. F. Kemp, pp. 244–250.
Precious stones, by George F. Kunz, pp. 813–865.
Quicksilver, by Joseph Struthers, pp. 231–238.
Salt, by Joseph Struthers, pp. 921–932.
Stone, pp. 665–701.
Sulphur and pyrite, by Joseph Struthers, pp. 933–948.
Talc and soapstone, by Joseph Hyde Pratt, pp. 867–872.
Tungsten, molybdenum, uranium, and vanadium, by Joseph Hyde Pratt, pp. 285–288.
Zinc, by Charles Kirchhoff, pp. 217–229.

10. Mineral resources of the United States. Calendar year 1903.
U. S. Geol. Surv., Min. Res. of U. S. for 1903, 1,204 pp., 1904.

Contains:

Abrasive materials, by Joseph Hyde Pratt, pp. 989–1015.
Aluminum and bauxite, by Joseph Struthers, pp. 265–279.
Antimony, by Joseph Struthers, pp. 317–326.
Arsenic, by Joseph Struthers, pp. 327–334.
Asbestos, by Joseph Hyde Pratt, pp. 1111–1116.
Asphaltum and bituminous rock, by Edmund Otis Hovey, pp. 745–754.
Barytes, by Joseph Hyde Pratt, pp. 1089–1094.
Borax, by Charles G. Yale, pp. 1017–1028.
Cement. Portland cement in Michigan in 1903, by L. L. Kimball, pp. 903–910.
Cement in foreign countries, pp. 900–903.
Clay-working industries, by Jefferson Middleton, pp. 791–832.
Coal, by Edward W. Parker, pp. 351–358.
Coke, by Edward W. Parker, pp. 539–608.
Copper, by Charles Kirchhoff, pp. 201–239.
Flint and feldspar, by Heinrich Ries, pp. 1117–1119.
Fluorspar and cryolite, by Joseph Hyde Pratt, pp. 1029–1032.
Gas, coke, tar, and ammonia at gas works and in retort coke ovens, by Edward W. Parker, pp. 609–634.
Glass sand, by A. T. Coons, pp. 1171–1178.
Gold and silver, pp. 157–199.
Graphite, by Joseph Hyde Pratt, pp. 1121–1129.
Gypsum and gypsum products, pp. 1033–1045.
Iron ores, by John Birkinbine, pp. 41–73.
Iron. Statistics of the American iron trade for 1903, by James M. Swank, pp. 75–127.
Lead, by Charles Kirchhoff, pp. 241–252.
Lithium, by Joseph Hyde Pratt, pp. 313–315.
Magnesite, by Charles G. Yale, pp. 1131–1135.
Manganese ores, by John Birkinbine, pp. 129–156.
Mineral paints, by Joseph Hyde Pratt, pp. 1095–1110.
Mineral waters, pp. 1137–1162.
Monazite and zircon, by Joseph Hyde Pratt, pp. 1163–1170.
Natural gas, by F. H. Oliphant, pp. 719–743.
Petroleum, by F. H. Oliphant, pp. 635–718.
Phosphate rock, by Edmund O. Hovey, pp. 1047–1058.
Platinum, pp. 311–312.
Precious stones, by George F. Kunz, pp. 911–977.
Quicksilver, pp. 281–284.
Salt, by Edmund O. Hovey, pp. 1059–1071.
Steel-hardening metals, by Joseph Hyde Pratt, pp. 285–310.
Stone, pp. 755–789.
Sulphur and pyrite, by Joseph Hyde Pratt, pp. 1073–1087.
Talc and soapstone, by Joseph Hyde Pratt, pp. 979–987.
Tin, by Joseph Struthers and Joseph Hyde Pratt, pp. 335–349.
Zinc, by Charles Kirchhoff, pp. 253–264.

Day (David T.)—Continued.

11. **Mineral resources** of the United States. Calendar year 1904.

U. S. Geol. Surv., Min. Res. of U. S. for 1904, 1,264 pp., 1905.

Contains:

Abrasive materials, by Joseph Hyde Pratt, pp. 995-1015.
Aluminum and bauxite, pp. 285-294.
Antimony, by Edmund Otis Hovey, pp. 363-369.
Arsenic, by Edmund Otis Hovey, pp. 371-374.
Asbestos, by Joseph Hyde Pratt, pp. 1125-1142.
Asphaltum and bituminous rock, by Edmund Otis Hovey, pp. 789-799.
Barytes, by Joseph Hyde Pratt, pp. 1095-1102.
Bismuth, by Edmund Otis Hovey, pp. 375-376.
Borax, by Charles G. Yale, pp. 1017-1028.
Bromine, by Frederick J. H. Merrill, pp. 1029-1030.
Cement, pp. 909-939.
Clay-working industries, by Jefferson Middleton, pp. 843-908.
Coal, by Edward W. Parker, pp. 381-577.
Coke, by Edward W. Parker, pp. 579-648.
Copper, by Charles Kirchhoff, pp. 221-257.
Flint and feldspar, by Heinrich Ries, pp. 1143-1145.
Fluorspar and cryolite, by Joseph Hyde Pratt, pp. 1031-1036.
Fuller's earth, pp. 1121-1123.
Gas, coke, tar, and ammonia at gas works and in retort coke ovens, by Edward W. Parker, pp. 649-674.
Glass sand and other sand, by A. T. Coons, pp. 1147-1155.
Gold and silver, by Waldemar Lindgren and others, pp. 141-220.
Graphite, by Joseph Hyde Pratt, pp. 1157-1167.
Gypsum and gypsum products, by George Perry Grimsley, pp. 1037-1052.
Iron ores, by John Birkinbine, pp. 37-68.
Iron. Statistics of the American iron trade for 1904, by James M. Swank, pp. 69-111.
Lead, by Charles Kirchhoff, pp. 259-271.
Lithium minerals, by Joseph Hyde Pratt, pp. 361-362.
Magnesite, by Charles G. Yale, pp. 1169-1174.
Manganese ores, by John Birkinbine, pp. 113-140.
Mica, by Joseph Hyde Pratt, pp. 1175-1184.
Mineral paints, by Joseph Hyde Pratt, pp. 1103-1119.
Mineral waters, pp. 1185-1208.
Monazite, zircon, gadolinite, and columbite, by Joseph Hyde Pratt, pp. 1209-1227.
Natural gas, by F. H. Oliphant, pp. 761-788.
Peat, by Henry H. Hindshaw, pp. 1229-1234.
Petroleum, by F. H. Oliphant, pp. 675-759.
Phosphate rock, by Edmund Otis Hovey, pp. 1053-1064.
Platinum, by David T. Day, pp. 359-360.
Precious stones, by George F. Kunz, pp. 941-987.
Quicksilver, pp. 295-299.
Salt, by Edmund Otis Hovey, pp. 1065-1077.
Steel and iron hardening metals, by Joseph Hyde Pratt, pp. 301-358
Stone, pp. 801-841.
Sulphur and pyrite, by Joseph Hyde Pratt, pp. 1079-1094.
Talc and soapstone, by Joseph Hyde Pratt, pp. 989-994.
Tin, by Joseph Hyde Pratt, pp. 377-380.
Zinc, by Charles Kirchhoff, pp. 273-283.

Dean (Bashford).

1. **On two new Arthrodires** from the Cleveland shale of Ohio

N. Y. Acad. Sci., Mem., vol. 2, pp. 86-100, 6 pls., 2 figs., 1901.

2. **On the characters** of Mylostoma Newberry.

N. Y. Acad. Sci., Mem., vol. 2, pp. 101-109, 2 pls., 8 figs., 1901.

3. **Further notes** on the relationships of the Arthrognathi.

N. Y. Acad. Sci., Mem., vol. 2, pp. 110-123, 7 figs., 1901.

Discusses the position of the Arthrognathi and the systematic arrangement and nomenclature of the structures.

4. **Historical evidence** as to the origin of the paired limbs of vertebrates.

Am. Nat., vol. 36, pp. 767-776, 1 fig., 1902.

Describes the evidence of paleontology on the subject.

Dean (Bashford)—Continued.

5. Biometric evidence in the problem of the paired limbs of the vertebrates.

   Am. Nat., vol. 36, pp. 837-846, 1 fig., 1902.
   Discusses studies of the development of paired limbs.

6. The preservation of muscle-fibres in sharks of the Cleveland shale.

   Am. Geol., vol. 30, pp. 273-278, 2 pls., 1902.
   Discusses the processes by which the delicate structures are preserved.

7. [Review of] 'Bibliography and Catalogue of the Fossil Vertebrata of North America,' by Oliver Perry Hay.

   Science, new ser., vol. 16, pp. 701-703, 1902.
   Contains critical notes on nomenclature and paleontology.

8. The early development of sharks from a comparative standpoint.

   Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 45-46, 1903.

Deckert (Emil).

1. Die Erdbebenherde und Schüttergebiete von Nord-Amerika in ihren Beziehungen zu den morphologischen Verhältnissen.

   Berlin Ges. für Erdkunde, Zeitsch., 1902, no. 5, pp. 367-389, 1902.
   A general discussion of the occurrences of earthquakes in North America with reference to their morphological relationships.

2. Martinique und sein Vulkanismus.

   Petermanns Mittheilungen, Band 48, pp. 133-136, 1 pl. (map), 1902.
   Gives a description of Martinique and the volcanic eruption of Mont Pelé.

De Cou (Ralph E.), **Downer** (R. H.) and.

1. A description of the working mines of Ouray County, Colorado.

   See **Downer** (R. H.) and **De Cou** (R. E.), 1.

Demaret (Léon).

1. Les principaux gisements de minerais de zinc des États-Unis d'Amérique.

   Revue universelle des Mines [Liége and Paris], 4ᵉ sér., t. 6, pp. 221-256, 6 pls., 1904.
   Describes the principal deposits of zinc ore in the United States, including observations on the character, occurrence, geologic relations, origin, etc.

2. Les principaux gisements des minerais de mercure du monde.

   Annales des Mines de Belgique, t. 9, 80 pp., 3 pls., 28 figs., 1904.
   Gives an account of the deposits of quicksilver ores in the world, their occurrence, geologic relations, production, etc. In the United States deposits in California, Oregon, and Texas are considered.

Denis (Theo.).

1. The coal fields of Canada.

   Can. Geol. Surv., Ann. Rept., vol. 15, Part S, pp. 53-93, 1904.

Denis (Theo.), **Ingall** (E. D.) and.

1. Geology of the country around Bruce mines [Ontario].

   See **Ingall** (E. D.) and **Denis** (T.), 1.

Dennis (W. B.)

1. A borax mine in southern Oregon.

   Eng. & Mg. Jour., vol. 73, pp. 581-582, 2 figs., 1902.
   Contains brief description of the deposit.

2. The quicksilver deposits of Oregon.

   Eng. & Mg. Jour., vol. 76, pp. 539-541, 1903.
   Describes the occurrence, character, and geologic relations of the quicksilver-ore deposits of Oregon and the mining developments.

Dern (George H.).

1. The geology of Mercur [Utah]. A history of the region. Description of the ores and their peculiar formations. How they were deposited.

   Mines & Minerals, vol. 24, pp. 543-545, 3 figs., 1904.
   Describes the general geology, the occurrence and character of the gold and silver ledges, and discusses the origin of the ores.

Derr (Homer Munro).

1. A method of petrographic analysis based upon chromatic interference with thin sections of doubly-refracting crystals in parallel polarized light. Thesis presented to the Faculty of Philosophy of the University of Pennsylvania in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

   The Randal Morgan Laboratory of Physics, 1903. 21 pp., 2 pls., 4 figs.

Dickinson (Harold T.).

1. Quarries of bluestone and other sandstones in the upper Devonian of New York State.

   N. Y. State Museum, Bull. no. 61, 112 pp., 20 pls., 1903.
   Describes the character, occurrence, and quarrying.

Dickson (Charles William).

1. Note on the condition of nickel in nickeliferous pyrrhotite from Sudbury [Ontario].

   Eng. & Mg. Jour., vol. 73, p. 660, 1902.
   Contains notes on the concentration of some of these ores.

2. The concentration of barium in limestone.

   School of Mines Quart., vol. 23, pp. 366–370, 1902.

3. Note on the condition of platinum in the nickel-copper ores from Sudbury [Ontario].

   Am. Jour. Sci., 4th ser., vol. 15, pp. 137–139, 1903.
   Describes occurrence and crystallographic characters.

4. The ore deposits of Sudbury, Ontario.

   Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 91, 65 pp., 26 figs., 1903; Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 3–67, 26 figs., 1904.
   Contains a discussion of the origin of the Sudbury nickeliferous ores. Includes a bibliography of the subject.

5. The distribution of the platinum metals in other sources than placers.

   Can. Mg. Inst., Jour., vol. 8, pp. 192–214, 1905.
   Describes the various occurrences of platinum.

Diehl (O. C.).

1. Gypsum.

   Mich. Miner, vol. 6, no. 6, pp. 21–24, 1904.
   Describes the occurrence of gypsum in Michigan and Utah.

Diller (Joseph Silas).

1. The Klamath Mountains.

   Mazama, vol. 1, no. 1, pp. 104–108, 1896.
   Describes briefly the geologic history of the Klamath Mountains region.

2. The geology of Crater Lake.

   Mazama, vol. 1, no. 2, pp. 161-170, 4 pls., 1897.
   Describes geologic structure and history of Crater Lake on Mount Mazama, Oregon.

3. Geomorphogeny of the Klamath Mountains [California-Oregon].

   Abstracts: Geol. Soc. Am., Bull., vol. 12, p. 461, 1901; Science, new ser., vol. 13, p. 97, 1901.

4. Coos Bay folio, Oregon.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 73, 1901.
   Describes the topographic features, the character, and the occurrence of the Cretaceous, Eocene, Neocene, and Pleistocene deposits and igneous rocks, and the occurrence of coal and gold.

5. The copper region of northern California.

   Eng. & Mg. Jour., vol. 73, pp. 857–858, 1 fig., 1902; Science, new ser., vol. 15, p. 823, 1902.
   Describes the occurrence of auriferous quartz veins and copper deposits of the region.

6. Copper in northern California.

   Mg. & Sci. Press., vol. 85, pp. 62, 72, 1902.
   Discusses the geologic occurrence of copper ores.

Diller (Joseph Silas)—Continued.

7. Volcanic rocks in Martinique and St. Vincent, collected by Robert T. Hill and Israel C. Russell.

Nat. Geog. Mag., vol. 13, pp. 285-296, 1902.
Describes the microsopic characters of these specimens.

8. The wreck of Mt. Mazama [Oregon].

Science, new ser., vol. 15, pp. 203-211, 1902.
Sketches the geologic history and formation of the Cascade Range, describes the formation and wrecking of Mt. Mazama, and discusses the evidences for the manner of its wrecking.

9. Volcanic dust from Guatemala.

Abstract: Science, new ser., vol. 16, p. 1029, 1902.

10. Topographic development of the Klamath Mountains.

U. S. Geol. Survey., Bull. no. 196, 69 pp., 13 pls., 7 figs., 1902.
A supplement contains notes on the geologic age of some of the rocks of the Klamath Mountains.

11. Port Orford folio, Oregon.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 89, 1903.
Describes topography, geologic history, character, and occurrence of pre-Cretaceous, Cretaceous, Tertiary, and surficial deposits and igneous rocks, coal, gold, and platinum minerals.

12. Klamath Mountains section, California.

Am. Jour. Sci.. 4th ser., vol. 15, pp. 342-362, 1903.
Describes general distribution and structural relations of Paleozoic, Mesozoic, and Cenozoic formations of the Klamath Mountains and occurrence and characters of eruptive rocks. Contains reports on fossils by Charles Schuchert, George H. Girty, Wm. M. Fontaine, David White, F. H. Knowlton, T. W. Stanton, and W. H. Dall.

13. Copper deposits of the Redding region, California.

U. S. Geol. Surv., Bull. no. 213, pp. 123-132, 1903.
Describes sedimentary and igneous rocks of the region and their geologic relations and character and occurrence of the ore deposits.

14. Iron ores of the Redding quadrangle, California.

U. S. Geol. Surv., Bull. no. 213, pp. 219-220, 1903.
Describes character and occurrence of iron ores in this area.

15. Limestone of the Redding district, California.

U. S. Geol. Surv., Bull. no. 213, p. 365, 1903.

16. Mining and mineral resources in the Redding quadrangle, California, in 1903.

U. S. Geol. Surv., Bull. no. 225, pp. 169-179, 1904.
Describes the occurrence and character of deposits of gold, silver, copper, chromite, and iron ores.

17. The composition and structure of the Klamath Mountains.

Abstract: Science, new ser., vol. 19, p. 794, 1904.

18. The Bragdon formation.

Am. Jour. Sci., 4th ser., vol. 19, pp. 379-387, 1 fig., 1905.
Describes the lithological characters, stratigraphy, and relations of the Bragdon formation of Shasta and Trinity counties, California, and presents evidence to show its Carboniferous age.

19. Mineral resources of the Indian Valley region, California.

U. S. Geol. Surv., Bull. no. 260, pp. 45-49, 1905.
Describes the development and general geology of the field, the geology of the gold mines, and the occurrence and mining of auriferous gravels.

20. So-called "iron ore" near Portland, Oreg.

U. S. Geol. Surv., Bull. no. 260, pp. 343-347, 1905.
Describes the chemical investigation of a so-called "iron ore" from near Portland, Oreg.

21. Coal in Washington near Portland, Oreg.

U. S. Geol. Surv., Bull. no. 260, pp. 411-412, 1905.
Describes the occurrence and composition of an Eocene coal near Portland, Oreg.

Diller (Joseph Silas) and **Patton** (Horace Bushnell).

1. **The geology and petrography of Crater Lake National Park [Oregon].**

   U. S. Geol. Surv., Professional Paper no. 3, 167 pp., 19 pls., 2 figs., 1902.
   Describes the physiographic and dynamic geology of the region and the occurrence and characters of the igneous rocks.

Diller (Joseph Silas) and **Steiger** (George).

1. **Volcanic dust and sand from St. Vincent caught at sea and the Barbados.**

   Science, new ser., vol. 15, pp. 947-950, 1902.
   Describes the characters and composition of this material.

Divers (Edward).

1. **Suggested nature of the phenomena of the eruption of Mount Pelée on July 9. Observed by the Royal Society Commission.**

   Nature, vol. 67, p. 126, 1902.
   Discusses the phenomena and their explanation.

Dixon (J. D.), **Nolan** (A. W.) and.

1. **Geology of St. Helen's Island [Quebec].**

   See **Nolan** (A. W.) and **Dixon** (J. D.), 1.

Dodge (Richard E.).

1. **Landslides of Echo and Vermillion cliffs.**

   Abstract: Geol. Soc. Am., Bull., vol. 12, p. 485, 1901.

2. **An interesting landslide in the Chaco Cañon, New Mexico.**

   Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 49-50, 1903.

3. **Arroyo formation.**

   Abstract: N. Y. Acad. Sci., Ann., vol. 15, p. 50, 1903.

4. **New York City folio, New York-New Jersey.**

   See **Merrill** (F. J. H.) and others, 1.

Dominian (Leon).

1. **Geology of Goldfield, Nevada.**

   Ores & Metals, vol. 13, no. 20, p. 25, 1904.
   Describes briefly the geologic structure and history of the region, and discusses the genesis of the gold and silver ores.

2. **The Goldfield district, Nevada.**

   Eng. & Mg. Jour., vol. 78, pp. 581-582, 1 fig., 1904.
   Discusses the general geology, and the character and occurrence of veins containing gold-ore deposits.

Dominian (Leon), **Smith** (E. Percy) and.

1. **Notes on a trip to White Oaks, New Mexico.**

   See **Smith** (E. Percy) and **Dominian** (Leon), 1.

Donald (J. T.)

1. **The limestone of the Philipsburg Railway and Coal Company.**

   Eng. & Mg. Jour., vol. 73, p. 657, 1902.
   Describes the occurrence and chemical composition of the limestones.

2. **The composition of some Canadian limestones.**

   Can. Mg. Rev., vol. 20, pp. 67-68, 1901. Can. Mg. Inst., Jour., vol. 4, pp. 152-154, 1901.
   Gives chemical analyses and notes on the economic uses of these limestones.

Douglas (James).

1. **Record of borings in the Sulphur Spring Valley, Arizona; and of agricultural experiments in the same locality.**

   Am. Phil. Soc., Proc., vol. 40, pp. 161-163, 1 fig., 1901.
   Gives record of well boring in the valley to the depth of 765 feet.

Douglass (Earl).

1. The Neocene lake beds of western Montana and descriptions of some new vertebrates from the Loup Fork.

   Mont. Univ., Missoula, Mont., 27 pp., 4 pls., 1899. (Published by the University.)

2. New species of Merycochœrus in Montana. Part II.

   Am. Jour. Sci., 4th ser., vol. 11, pp. 73-89, 5 figs., 1901.
   Describes material from Tertiary beds.

3. A Cretaceous and Lower Tertiary section in south central Montana.

   Am. Phil. Soc., Proc., vol. 41, pp. 207-224, 1 pl., 1902.
   Describes the lithologic and faunal characters of the beds exposed along the Musselshell River, and discusses the problem of the transition from the Mesozoic to Cenozoic time.

4. Fossil mammalia of the White River beds of Montana.

   Am. Phil. Soc., Trans., new ser., vol. 20, pp. 237-279, 1 pl., map, 1902.
   Describes the characters of the strata and of the fossil mammals collected.

5. Dinosaurs in the Ft. Pierre shales and underlying beds in Montana.

   Science, new ser., vol. 15, pp. 31-32, 1902.
   Discusses the occurrence of the fossils and the character and origin of the beds in which they are found.

6. The discovery of Torrejon mammals in Montana.

   Science, new ser., vol. 15, pp. 272-273, 1902.

7. Astropecten? montanus—a new star-fish from the Fort Benton; and some geological notes.

   Carnegie Mus., Ann., vol. 2, pp. 5-8, 1 fig., 1903.

8. New vertebrates from the Montana Tertiary.

   Carnegie Mus., Ann., vol. 2, pp. 145-199, 1 pl., 37 figs., 1903.
   A brief account of the stratigraphy of the formations from which the fossils were obtained precedes detailed generic and specific descriptions.

9. The Tertiary of Montana.

   Carnegie Mus., Mem., vol. 2, pp. 203-224, 1 pl., 1905.
   Describes the remains of fossil mammalia from the White River beds of Montana.

10. Some notes on the geology of southwestern Montana.

    Carnegie Mus., Ann., vol. 3, pp. 407-428, 1 pl., 1905.
    Describes the occurrence, character, and relations of Archean, Algonkian, Cambrian, Devonian, and Carboniferous strata, and gives lists of fossils obtained.

11. Source of the placer gold in Alder Gulch, Montana.

    Mines and Minerals, vol. 25, pp. 353-355, 3 figs., 1905.
    Contains notes on the geology of the region.

Dowlen (Walton E.).

1. The Turtle Mountain rock slide [Alberta, Canada].

   Eng. & Mg. Jour., vol. 76, pp. 10-12, illus., 1903.
   Describes a rock slide and the geologic conditions which produced it.

Dowling (D. B.).

1. Report on the geology of the west shore and islands of Lake Winnipeg.

   Can. Geol. Surv., new ser., vol. 11, Rept. F., 100 pp., 2 pls., 10 figs., 1901, published in 1900.
   Describes the physiography, the character, occurrence, and faunas of the Ordovician strata and the glacial phenomena of the region.

2. The physical geography of the Red River Valley [Canada].

   Ottawa Nat., vol. 15, pp. 115-120, 2 pls., 1901.
   Describes the physiographic history of the region.

3. The west side of James Bay.

   Can. Geol. Surv., Summ. Rept. for 1901, pp. 107-115, 1902.
   Describes the author's observations in this area.

4. Eastern Assiniboia and southern Manitoba.

   Can. Geol. Surv., Summ. Rept. for 1902, pp. 180-190, 1903.
   Describes observations upon the geology and economic resources of the region examined.

Dowling (D. B.)—Continued.

5. Notes to accompany a contoured plan of the lower slope of Turtle Mountain, Manitoba.

Can. Geol. Surv., Summ. Report for 1902, pp. 191-201, 1903.
Gives geologic notes on the occurrence of coal.

6. Report on geological explorations in Athabaska, Saskatchewan, and Keewatin districts, including Moose Lake and the route from Cumberland Lake to the Churchill River, and the upper parts of Burntwood and Grass rivers.

Can. Geol. Surv., Ann. Rept., new ser., vol. 13, 44 pp., 2 pls., and map, 1903. (Published separately, 1902.)
Gives observations upon the occurrence and character of Laurentian, Huronian, Cambro-Silurian, Silurian, and Pleistocene deposits and the economic resources, and upon physiographic and geologic features of the region examined.

7. On the coal basins in the Rocky Mountains, Sheep Creek and Cascade troughs northward to the Panther River.

Can. Geol. Surv., Summ. Rept. for 1903, pp. 83-91, 1 map, 5 figs., 1904.

8. Report on an exploration of Ekwan River, Sutton Mill lakes, and part of the west coast of James Bay.

Can. Geol. Surv., Ann. Rept., vol. 14, pt. F, pp. 1-37, 2 pls., 5 figs., 1904.

9. Report on the coal field of the Souris River, eastern Assiniboia.

Can. Geol. Surv., Ann. Rept., vol. 15, pt. F, 45 pp., 7 pls., 1904.
Describes the character and occurrence of the coal beds in eastern Assiniboia, and in detail the stratigraphy of the region.

10. The stratigraphy of the Cascade coal basin.

Can. Mg. Rev., vol. 24, pp. 105-111, 6 figs., 1905; Can. Mg. Inst., Jour., vol. 8, pp. 221-234, 5 figs., 1905.

11. The Cascade and Costigan coal basins and their continuation northward [Alberta].

Can. Geol. Surv., Summ. Rept. for 1904, pp. 105-121, 1 pl. and 1 map, 1905.
Gives observations on the geology, and the occurrence and relations of the coal deposits.

Downer (R. H.).

1. Ore deposits of the American-Nettie mine, Ouray, Colo.

Colo. Sch. Mines, Bull., vol. 1, pp. 104-107, 2 figs., 1901.
Describes the character and occurrence of the ore bodies.

Downer (R. H.) and **De Cou** (Ralph E.).

1. A description of the working mines of Ouray County, Colorado.

Colo. Sch. Mines, Bull., vol. 1, pp. 242-259, 1901.
Includes observations on the geology and on the character, occurrence, and origin of the ore bodies.

Drake (Frank V.).

1. Mineral resources and mining in Oregon.

Am. Mg. Cong., 7th Ann. Sess., Rept. of Proc., pp. 119-128, 1905.

Drake (N. F.), **Lindgren** (Waldemar) and.

1. Nampa folio, Idaho-Oregon.

See **Lindgren** (Waldemar) and **Drake** (N. F.), 1.

2. Silver City folio, Idaho.

See **Lindgren** (Waldemar) and **Drake** (N. F.), 2.

Draper (Marshall D.).

1. The district of Goldfield, Nevada.

Eng. & Mg. Jour., vol. 78, pp. 383-384, 4 figs., 1904.
Gives observations upon the general geology and the occurrence of the gold-ore deposits.

Dresser (John A.).

1. On the physical geography of a northern section of the Appalachian Mountain system.

Am. Bur. Geog., Bull., vol. 1, pp. 275-279, 1900.

Dresser (John A.)—Continued.

2. A hornblende lamprophyre dike at Richmond, P. Q.

   Can. Rec. Sci., vol. 8, pp. 315–320, 1901.
   Describes the occurrence of the dike and the characters of the dike rock.

3. A preliminary note on an amygdaloidal trap rock in the eastern townships of the Province of Quebec.

   Ottawa Nat., vol. 14, pp. 180–182, 1901.
   Describes the megascopic and microscopic characters of the rock.

4. On the petrography of Mt. Orford.

   Am. Geol., vol. 27, pp. 14–21, 1901.
   Describes occurrence and character of diabase, gabbro-diorite, serpentine, and ophicalcite, and gives a summary of the geologic history of the region.

5. On the petrography of Shefford Mountain [Quebec].

   Am. Geol., vol. 28, pp. 204–213, 1 pl., 1901.
   Describes petrographic characters of essexite, nordmarkite, and pulaskite, and discusses their relations.

6. A petrographical contribution to the geology of the eastern townships of the Province of Quebec.

   Am. Jour. Sci., 4th ser., vol. 14, pp. 43–48, 1902.
   Describes the pre-Cambrian igneous rocks that are regarded as similar to the volcanics of South Mountain, Pa.

7. On the copper-bearing volcanic rocks in the eastern townships of the Province of Quebec.

   Can. Mg. Inst., Jour., vol. 5, pp. 81–86, 1902; Eng. & Mg. Jour., vol. 73, p. 412, 3 figs., 1902.

8. Petrography of Shefford and Brome Mountains [Canada].

   Can. Geol. Surv., Summ. Rept. for 1901, pp. 183–187, 1902.
   Describes petrologic and other observations.

9. Report on the geology and petrography of Shefford Mountain, Quebec.

   Can. Geol. Surv., Ann. Rept., new ser., vol. 13, 35 pp., 6 pls., 1 fig. and 1 map, 1903. (Published separately, 1902.)
   Describes the geology, and the occurrence, relations, and composition of the igneous rocks.

10. An investigation of the copper-bearing rocks of the eastern townships, Province of Quebec.

    Can. Geol. Surv., Summ. Rept. for 1902, pp. 302–316, 1903.
    Discusses the occurrence, geologic position, and character of copper-ore deposits.

11. Geology of Brome Mountain, one of the Monteregian Hills.

    Am. Jour. Sci., 4th ser., vol. 17, pp. 347–358, 2 figs., 1904.
    Describes the position and physiographic origin of the Monteregian Hills, and in detail the petrography of Brome Mountain.

12. A new area of copper-bearing rocks in the eastern townships of the Province of Quebec.

    Can. Mg. Rev., vol. 23, p. 29, 1904; Can. Mg. Inst., Jour., vol. 7, pp. 397–400, 1904.
    Describes the occurrence and geologic relations.

13. The copper-bearing rocks of the eastern townships, Quebec.

    Can. Geol. Surv., Summ. Rept. for 1903, pp. 146–149, 1904.
    Describes investigations upon copper-producing areas in Quebec.

14. The bed-rock of the Gilbert River gold fields, Quebec.

    Can. Mg. Rev., vol. 24, p. 71, 1905. Can. Mg. Inst. Jour., vol. 8, pp. 259–266, 1906
    Discusses the source of the placer gold of this region.

15. The copper-bearing rocks of the Sherbrooke district, P. Q.

    Can. Geol. Surv., Summ. Rept. for 1904, pp. 263-269, 1905.
    Includes observations on the geology of the region, and the occurrence of minerals of economic importance.

16. A note on varieties of serpentine in south-eastern Quebec.

    Can. Mg. Inst., Jour., vol. 8, pp. 267-271, 1905.

Drevermann (Fr.).

1. Bemerkungen über John M. Clarke's Beschreibung der Naples-Fauna, II. Teil.

Centralbl. f. Min., Geol. u. Pal., pp. 385–391, 1905.
Discusses morphological characters of various Devonian brachiopods.

Dryer (Charles Redway).

1. Certain peculiar eskers and esker lakes of northeastern Indiana.

Jour. Geol., vol. 9, pp. 123–129, 2 figs., 1901.
Describes glacial phenomena of the region.

2. Lessons in physical geography.

American Book Co., 1901, 430 pp. Review: Jour. Geol., vol. 9, pp. 638–639, 1901.

3. The use of the word "geest" in geology.

Science, new ser., vol. 17, p. 234, 1903.
Discusses nomenclature of surficial deposits and suggests the use of the term "mantle rock."

4. Finger lake region of western New York.

Geol. Soc. Am., Bull., vol. 15, pp. 449–460, 4 pls., 1904.
Describes physiographic features and glacial deposits, particularly moraines, of this region, and discusses their interpretation.

Duerden (J. E.).

1. Aggregated colonies in Madreporarian corals.

Am. Nat., vol. 36, pp. 461–471, 3 figs., 1902.
Describes the process of fixation and development of larvæ of the West Indian coral Siderastræa radians.

2. Boring algæ as agents in the disintegration of corals.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 323–332, 1 pl., 1902.
Reviews the literature and discusses the chemical and physical processes by which the disintegration is effected.

3. Relationships of the Rugosa (Tetracoralla) to the living Zoantheæ.

Johns Hopkins Univ. Circ., vol. 21, no. 155, pp. 19–25, 12 figs., 1902; Ann. Mag. Nat. Hist., 7th ser., vol. 9, pp. 381–398, 12 figs., 1902.

4. The morphology of the Madreporaria.

Johns Hopkins Univ. Circ., vol. 21, no. 157, pp. 59–66, 13 figs., 1902; Ann. Mag. Nat. Hist., 7th ser., vol. 10, pp. 96–115, 13 figs., pp. 382–393, 4 figs., 1902.

5. The development of septa in the Paleozoic corals.

Abstract: Science, new ser., vol. 15, p. 350, 1902.

6. A method of studying the septal sequence in Paleozoic corals.

Elisha Mitchell Sci. Soc., Jour., vol. 19, pp. 32–33, 1903.

7. The morphology of the Madreporaria.

Ann. & Mag. Nat. Hist., 7th ser., vol. 11, pp. 141–155, 7 figs., 1903.

8. The morphology of the Madreporaria. V. Septal sequence.

Biological Bulletin, vol. 7, pp. 79–104, 9 figs., 1904.

9. Recent results on the morphology and development of coral polyps.

Smith. Misc. Coll., vol. 47 (Quar. Issue, vol. 2, no. 1), pp. 93–111, 16 figs., 1904.

10. The antiquity of the zoanthid actinians.

Mich. Acad. Sci., 6th Rept., pp. 195–198, 1904.

11. The development and relationships of the Rugosa (Tetracoralla).

Abstract: Science, new ser., vol. 19, pp. 217–218, 525–526, 1904.

12. The morphology of the Madreporaria. VI. The fossula in rugose corals.

Biol. Bull., vol. 9, pp. 27–52, 12 figs., 1905.

Duffield (M. S.).

1. The Cumberland Plateau coal field [Tennessee].

Eng. & Mg. Jour., vol. 74, pp. 442–443, 2 figs., 1902.
Describes the geology of this area and gives a geological section of the Cumberland Plateau.

Dumble (Edwin T.).

1. Physical geography, geology, and resources of Texas.

A Comprehensive History of Texas, published by W. G. Scarff, Dallas, Tex., vol. 2, chap. 4, pp. 471-516, illus., 1898.

Includes a brief account of the geologic history and structure of the State, and describes geographic and physiograpic features and mineral resources.

2. Geology of the Beaumont oil field.

Houston Post, 5 pp., 1901. (Private publication.)

Describes geologic structure of the region and discusses the geologic horizon of the oil.

3. The iron ores of east Texas.

Houston Post, 4 pp., 1901. (Private publication.)

Describes the occurrence of iron ores in eastern Texas and processes necessary for their development.

4. Cretaceous of Obispo Canyon, Sonora, Mexico.

Texas Acad. Sci., Trans., vol. 4, p. 81, 1901.

Gives brief description of the character of the beds.

5. Occurrence of oyster shells in volcanic deposits in Sonora, Mexico.

Texas Acad. Sci., Trans., vol. 4, p. 82, 1901.

Gives brief description of occurrence.

6. The iron ores of east Texas.

Eng. & Mg.-Jour., vol. 72, p. 104, 1901.

Contains brief notes on the character of the ores.

7. Notes on the geology of southeastern Arizona.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 696-715, 1902.

Describes the occurrence of Cenozoic, Mesozoic, and Paleozoic strata of Cochise County, Arizona, and gives a general section of the rocks.

8. [In discussion of paper by A. F. Lucas "The great oil-well near Beaumont, Texas."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 1029-1032, 1902.

9. A Carboniferous coal in Arizona.

Am. Geol., vol. 30, p. 270, 1902.

Describes the occurrence and gives a list of fossils.

10. The Tertiary of the Sabine River.

Science, new ser., vol. 16, pp. 670-671, 1902.

Discusses the correlation of Tertiary formations in Texas and Louisiana.

11. The red sandstone of the Diabolo Mountains, Texas.

Texas Acad. Sci., Trans., vol. 4, pt. 2, nos. 6-7, pp. 1-3 (103-105), 1902.

Discusses the stratigraphic position of this formation.

12. Cretaceous and later rocks of Presidio and Brewster counties [Texas].

Texas Acad. Sci., Trans., vol. 4 pt. 2, nos. 6-7, pp. 1-8 (107-114). 1902.

Describes the geologic structure of this region and gives sections of the strata.

13. Geology of southwestern Texas.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 913-987, 2 figs., 1903.

Describes the topography, and the character, occurrence, and geologic relations of formations of Tertiary and Pleistocene age in southwestern Texas.

Duryee (Edward).

1. Cement investigations in Arizona.

U. S. Geol. Surv., Bull. no. 213, pp. 372-380, 1903.

Dutton (Clarence Edward).

1. Earthquakes in the light of the new seismology.

New York, G. P. Putnam's Sons, 314 pp., 10 pls., 63 figs., 1904.

A general treatise upon earthquakes, their nature, causes, etc. The Charleston and other American earthquakes are considered.

Dwight (W. B.).

1. Fort Cassin beds in the Calciferous limestone of Dutchess County, New York.

   Abstract: Geol. Soc. Am., Bull., vol. 12, pp. 490-491, 1901.
   Contains notes on the faunas of these beds.

Dyar (W. W.).

1. The colossal bridges of Utah. A recent discovery of natural wonders.

   Century Mag., vol. 68, pp. 505-511, 1904.

E.

Eakle (Arthur S.).

1. Mineralogical notes, with chemical analyses by W. T. Schaller.

   Univ. of Cal., Dept. of Geol., Bull., vol. 2, pp. 315-326, 1 pl., 1901.
   Describes pectolite, zircon crystals, esmeraldaite, coquimbite, and altaite crystals.

2. Colemanite from southern California.

   Univ. Cal., Dept. Geol., Bull., vol. 3, pp. 31-50, 2 pls., 1902.
   Describes the crystals and the method of measurement with the two-circle goniometer.

3. Note on the identity of palacheite and botryogen.

   Am. Jour. Sci., 4th ser., vol. 16, pp. 379-380, 1903.
   Describes composition, characters, and occurrence.

4. Palacheite.

   Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 231-236, 1 pl., 1903.
   Describes occurrence, crystallographic characters, and physical and chemical properties of this mineral discovered near Knoxville, California.

5. Mineral tables for the determination of minerals by their physical properties.

   New York, John Wiley & Sons, 73 pp., 1904.

6. Phosphorescent sphalerite.

   Cal. Jour. Techn., vol. 3, pp. 30-31, 1904.
   Describes the occurrence and characters of a sphalerite from Mariposa County, California, and its property of phosphorescence.

Eakle (A. S.) and **Sharwood** (W. J.).

1. Luminescent zinc-blende.

   Eng & Mg. Jour., vol. 77, p. 1000, 1904.
   Describes occurrence in Mariposa County, California, composition, and physical qualities.

Easter (S. E.).

1. Jade.

   Nat. Geog. Mag., vol 14, pp. 9-17, 1903.
   Describes characters, occurrences, and uses.

Eastman (Charles R.).

1. Systematic paleontology, Eocene Pisces.

   Md Geol. Surv., Eocene, pp. 98-115, 4 pls., 1901.

2. On Campodus, Edestus, Helicoprion, Acanthodes, and other Permo-Carboniferous sharks.

   Abstracts: Science, new ser., vol 14, p. 795, 1901. Sci. Am. Suppl., vol. 52, p. 21505, 1901.

3. On Campyloprion, a new form of Edestus-like dentition.

   Geol. Mag., dec. iv, vol. 9, pp. 148-152, 1 pl. and 1 fig., 1902

4. The Carboniferous fish fauna of Mazon Creek, Illinois.

   Jour. Geol., vol. 10, pp. 535-541, 5 figs., 1902
   Describes two species of Acanthodes and one each of Cœlacanthus and Elonichthys, and gives a list of the vertebrates found at this locality.

5. On the genus Peripristis, St. John.

   Geol. Mag., dec. iv, vol. 9, pp. 388-391, 2 figs., 1902.

6. Some Carboniferous cestraciont and acanthodian sharks.

   Harvard Coll., Mus. Comp. Zool., Bull., vol. 39, pp. 55-99, 7 pls., 14 figs., 1902.

Eastman (Charles R.)—Continued.

7. Phylogeny of the cestraciont group of sharks.

   Abstract: Science, new ser., vol. 16, p. 267, 1902.

8. Some hitherto unpublished observations of Orestes St. John on Paleozoic fishes.

   Am. Nat., vol. 36, pp. 653–659, 4 figs., 1902.
   Contains notes on Dinichthys pustulosus and Edestus and Cochliodus.

9. Notice of interesting new forms of Carboniferous fish remains.

   Am. Nat., vol. 36, pp. 849–854, 2 figs., 1902.
   Describes material from the Carboniferous of the Mississippi Valley.

10. Carboniferous fishes from the central Western States.

    Harvard Coll., Mus. Comp. Zool., Bull., vol. 39, pp. 163–226, 4 pls., 17 figs., 1903.
    A short account of the stratigraphy of the Upper Carboniferous of Kansas and Nebraska precedes the systematic descriptions.

11. A peculiar modification amongst Permian dipnoans.

    Am. Nat., vol. 37, pp. 493–495, 2 figs., 1903.

12. Devonian fish fauna of Iowa.

    Abstract: Geol. Soc. Am. Bull., vol. 13, p. 537, 1903.

13. On the nature of Edestus and related forms.

    Mark Anniversary Volume [Harvard University], New York, Henry Holt and Company, pp. 279–289, 1 pl., 1903.
    A critical discussion based upon new material lately discovered.

14. On the dentition of Rhynchodus and other fossil fishes.

    Am. Nat., vol. 38, pp. 295–299, 2 figs., 1904.
    Includes a description of Rhynchodus pertenuis n. sp.

15. A recent paleontological induction.

    Science, new ser., vol. 20, pp. 465–466, 1904.
    Discusses the association of pebbles with the remains of plesiosaurs.

16. On Upper Devonian fish remains from Colorado.

    Am. Jour. Sci., 4th ser., vol. 18, pp. 253–260, 6 figs., 1904.
    Describes the occurrence and character of fish remains from Devonian strata in the San Juan region of Colorado, and gives a systematic description of a new form.

17. Fossil plumage.

    Am. Nat., vol. 38, pp. 669–672, 1 fig., 1904.

18. Systematic paleontology of the Miocene deposits of Maryland: Pisces.

    Md. Geol. Surv., Miocene, pp. 71–93, 5 pls., 1904.

19. A brief general account of fossil fishes.

    N. J. Geol. Surv., Ann. Rept. for 1904, pp. 27–66, 8 figs., 1905.

20. The Triassic fishes of New Jersey.

    N. J. Geol. Surv., Ann. Rept. for 1904, pp. 67–140, 14 pls., 5 figs., 1905.

21. Fossil avian remains from Armissan [France].

    Carnegie Mus., Mem., vol. 2, pp. 131–138, 4 pls., 1905.
    Includes a list showing geological distribution of gallinaceous birds.

22. The literature of Edestus.

    Am. Nat., vol. 39, pp. 405–409, 1905.
    Discusses the relationships of Edestus and gives a list of papers dealing with Edestus and related forms.

Eastman (Charles R.) and **Barbour** (Erwin H.).

1. Synopsis of the Missourian and Permo-Carboniferous fish fauna of Kansas and Nebraska.

   Abstract: Science, new ser., vol. 16, pp. 266–267, 1902.

Easton (S. A.).

1. Notes on Tonopah, Nevada.

   Eng. & Mg. Jour., vol. 73, p. 697, 1902.
   Contains notes on the geology of the region and the occurrence of the gold ores.

Eaton (George F.).

1. Notes on the collection of Triassic fishes at Yale.

   Am. Jour. Sci., 4th ser., vol. 15, pp. 259-268, 2 pls., 1903.
   Gives descriptions and figures of some of the material.

2. The characters of Pteranodon.

   Am. Jour. Sci., 4th ser., vol. 16, pp. 82-86, 2 pls., 1903.

3. Characters of Pteranodon (second paper).

   Am. Jour. Sci., 4th ser., vol. 17, pp. 318-320, 2 pls., 1904.

4. Obituary—John Bell Hatcher.

   Am. Jour. Sci., 4th ser., vol. 18, pp. 163-164, 1904.

Eavenson (H. N.).

1. The Connellsville region. Its mineral resources—the extent of territory—the methods of mining and amount of output.

   Mines & Minerals, vol. 23, pp. 26-29, 1902.

Eckel (Edwin C.).

1. The formation as the basis for geologic mapping.

   Jour. Geol., vol. 9, pp. 708-717, 1901.
   Discusses the problems involved and the application of the proposed system.

2. The emery deposits of Westchester County, New York.

   Min. Ind. for 1900, pp. 15-17, 1901.
   Describes briefly the character and occurrence of the deposits.

3. A recently discovered extension of the Tennessee white phosphate fields.

   U. S. Geol. Surv., Min. Res. for 1900, pp. 812-813, 1901.
   Briefly describes occurrence in Decatur County.

4. The Portland-cement industry in New York.

   Eng. News, vol. 45, pp. 365-367, 1901.
   Describes the development of the industry and the character and occurrence of the raw materials, and discusses the processes of manufacture employed.

5. Chapters on the cement industry in New York.

   N. Y. State Mus., Bull. no. 44, pp. 849-955, 17 pls., map in pocket, 1901.
   Describes character of materials and processes of manufacture of cement in New York.

6. The quarry industry in southeastern New York.

   N. Y. State Mus., 54th Ann. Rept., vol. 1, pp. r141-r176, 20 pls., 1902.

7. The classification of the crystalline cements.

   Am. Geol., vol. 29, pp. 146-154, 1902.

8. The preparation of a geologic map.

   Jour. Geol., vol. 10, pp. 50-56, 1902.

9. Summaries of the literature of structural materials. I.

   Jour. Geol., vol. 10, pp. 442-449, 1902.

10. Summaries of the literature of structural materials. II.

    Jour. Geol., vol. 10, pp. 542-550, 1902.

11. Summaries of the literature of structural materials. III.

    Jour. Geol., vol. 11, pp. 86-92, 1903.

12. Summaries of the literature of economic geology.

    Jour. Geol., vol. 11, pp. 716-719, 1903.

13. The materials and manufacture of Portland cement.

    Cement Resources of Alabama. 58th Cong., 1st sess., Sen. Doc. no. 19, pp. 1-11. 1903.
    Describes character of materials required and processes of manufacture with particular reference to the industry in Alabama.

14. Molding sand: its uses, properties, and occurrence.

    N. Y. State Mus., 55th Ann. Rept., pp. r91-r96, 1903.

Eckel (Edwin C.)—Continued.

15. The Dahlonega gold district of Georgia.

Eng. & Mg. Jour., vol. 75, pp. 219-220, 1903.

Describes the general geology of the region, and the character and occurrence of the ore deposits.

16. Gold and pyrite deposits of the Dahlonega district, Georgia.

U. S. Geol. Surv., Bull. no. 213, pp. 57-63, 1903; Mines & Minerals, vol. 23, pp. 493-494, 1903.

Gives a general account of the geology of the region and the character and occurrence of gold and pyrite deposits.

17. Utilization of iron and steel slags.

U. S. Geol. Surv., Bull. no. 213, pp. 221-231, 1903.

18. Stoneware and brick clays of western Tennessee and northwestern Mississippi.

U. S. Geol. Surv., Bull. no. 213, pp. 382-391, 1903.

Describes occurrence, character, and utilization of clay deposits in this region.

19. Salt and gypsum deposits of southwestern Virginia.

U. S. Geol. Surv., Bull. no. 213, pp. 406-416, 1903.

Describes briefly the stratigraphy and geologic structure of the region, and the occurrence of salt and gypsum deposits and their development.

20. The white phosphates of Decatur County, Tenn.

U. S. Geol. Surv., Bull. no. 213, pp. 424-425, 1903.

Describes occurrence of phosphate deposits in this area.

21. Dahlonega mining district, Georgia.

Abstract: Science, new ser., vol. 17, p. 793, 1903.

Gives observations upon the geology of the region.

22. Gypsum deposits in New York.

U. S. Geol. Surv., Bull. no. 223, pp. 33-35, 1 pl., 2 figs., 1904.

Describes economic development and geologic relations of the gypsum deposits in the Salina group.

23. Gypsum deposits in Virginia.

U. S. Geol. Surv., Bull. no. 223, pp. 36-37, 1 pl., 1 fig., 1904.

Describes economic development and geologic relations of gypsum beds occurring in Carboniferous strata.

24. The slate deposits of California and Utah.

U. S. Geol. Surv., Bull. no. 225, pp. 417-422, 1904.

Describes the occurrence and character of slate deposits in Eldorado County, California, and near Provo, Utah.

25. Cement-rock deposits of the Lehigh district of Pennsylvania and New Jersey.

U. S. Geol. Surv., Bull. no. 225, pp. 448-455, 1904.

Describes location and general geology of the district, the stratigraphic position and character of the cement rock, methods of manufacturing, and character of the product.

26. The salt industry in Utah and California.

U. S. Geol. Surv., Bull. no. 225, pp. 488-495, 1904.

Describes character and source of materials used and methods of manufacture employed.

27. On a California roofing slate of igneous origin.

Jour. Geol., vol. 12, pp. 15-24, 1904.

Describes occurrence and character of slate deposits in California and discusses their origin.

28. On the chemical composition of American shales and roofing slates.

Jour. Geol., vol. 12, pp. 25-29, 1904.

29. The nonmetallic mineral products of the United States.

Mg. Mag., vol. 10, pp. 167-174, 1 pl., 1904.

Contains notes on the occurrence of nonmetallic mineral products.

30. Brown hematite deposits of eastern New York and western New England.

Eng. & Mg. Jour., vol. 78, pp. 432-434, 6 figs., 1904.

Describes the general geology of the region and the character and occurrence of the iron ores and discusses their origin.

Eckel (Edwin C.)—Continued.

31. The materials and manufacture of Portland cement.

Ala. Geol. Surv., Bull. no. 8, pp. 1-59, 1904.

Includes a discussion of the origin and general characters of limestone and other raw materials used in cement manufacture.

32. Cements, limes, and plasters: their materials, manufacture, and properties.

New York, John Wiley & Sons, 1905. 712 pp., 165 figs.

Includes notes on the geologic distribution of cement materials.

33. The Clinton hematite.

Eng. and Mg. Jour., vol. 79, pp. 897-898, 2 figs., 1905.

Describes the character, occurrence, and utilization of Clinton iron ores, particularly in the town of Clinton, New York.

34. Cement materials and industry of the United States.

U. S. Geol. Surv., Bull. no. 243, 395 pp., 15 pls., 1 fig., 1905.

Describes the character and general occurrence of cement materials and their preparation, and in detail the occurrence, geologic relations, and character of limestones, shales, and marls in the various States.

35. Iron and manganese ores of the United States.

U. S. Geol. Surv., Bull. no. 260, pp. 317-320, 1905.

Describes the production, character, and occurrence of iron and manganese ore deposits of the United States.

36. Limonite deposits of eastern New York and western New England.

U. S. Geol. Surv., Bull. no. 260, pp. 335-342, 1905.

Describes the geology of the region, the mining developments, and discusses the character and origin of the ores.

37. The iron ores of northeastern Texas.

U. S. Geol. Surv., Bull. no. 260, pp. 348-354, 1905.

Describes the general geology, and the occurrence, composition, and origin of the ores.

38. The American cement industry.

U. S. Geol. Surv., Bull. no. 260, pp. 496-505, 1905.

Describes the classification and production of cement, and the geologic relations, occurrence, and character of the raw materials in the United States.

39. Portland-cement resources of New York.

U. S. Geol. Surv., Bull. no. 260, pp. 522-530, 1905.

Describes the occurrence, composition, and geologic relations of cement-making rocks of New York.

40. Pyrite deposits of the western Adirondacks, New York

U. S. Geol. Surv., Bull. no. 260, pp. 587-588, 1905.

Describes the occurrence and character of pyrite deposits, and the mining and milling of the ore.

Eckel (Edwin C.) and **Bain** (H. F.).

1. Cement and cement materials of Iowa.

Iowa Geol. Surv., vol. 15, Ann. Rept., 1904, pp. 33-124, 2 pls., 1905.

Describes the process of cement manufacture, and the geologic occurrence and character of cement materials in Iowa.

Eckel (Edwin C.) and **Crider** (A. F.).

1. Geology and cement resources of the Tombigbee River district, Mississippi-Alabama.

58th Cong., 3d sess., Sen. Doc. no. 165, 23 pp., 1 pl. (map), 1905.

Describes the occurrence and character of limestones and other materials in this region required in the manufacture of Portland cement.

Eckel (Edwin C.), **Hayes** (C. W.) and.

1. Iron ores of the Cartersville district, Georgia.

See **Hayes** (C. W.) and **Eckel** (E. C.), 1.

2. Occurrence and development of ocher deposits in the Cartersville district, Georgia.

See **Hayes** (C. W.) and **Eckel** (E. C.), 2.

Eckel (E. C.), **Johnson** (L. C.) and.

1. Notes on wells, springs, and general water resources of Mississippi.

See **Johnson** (L. C.) and **Eckel** (E. C.), 1.

Edman (J. A.).

1. Corundum in Montana.

Mg. & Sci. Press, vol. 84, p. 21, 1902.
Brief notes on occurrence.

Edwards (Henry W.).

1. Notes on the geology of the Isthmus of Panama.

Eng. & Mg. Jour., vol. 73, pp. 862-863, 1902.
Contains general notes on the rocks of the region.

Edwards (J. Jep.).

1. Paleontology of Bartholomew County, Indiana, mammalian fossils.

Ind. Acad. Sci., Proc. for 1901, pp. 247-248, 1902.
Discusses the occurrence of Quaternary mammalian remains.

Edwards (W. F.).

1. The new geology and vein formation. Discussion.

Colo. Sci. Soc., Proc., vol. 7, pp. 289-296, 1904.
Describes the history of the nebular hypothesis and discusses the relative merits of this and the planetesimal hypothesis.

Eggleston (Julius Wooster).

1. Some glacial remains near Woodstock, Conn.

Am. Jour. Sci., 4th ser., vol. 13, pp. 403-408, 1902.
Describes local glacial features.

2. Physiography—an outline of its scope and applications.

Colo. Sch. Mines, Bull., vol. 2, no. 3, pp. 96-110, 1904.
Describes physiographic areas of the United States and various local physiographic features as illustrative of principles set forth in the paper.

Eisele (Martin A.)

1. Report of the superintendent of the Hot Springs Reservation.

Dept. of the Interior, Ann. Rept. for the year ended June 30, 1902 (57th Cong., 2d sess., H. R. Doc. no. 5), pp. 499-526, 6 pls., 1902.
Gives chemical analyses of the water and a brief extract from W. H. Weed's report as to the source of the heat.

Eisen (Gustav.).

1. The earthquake and volcanic eruption in Guatemala in 1902.

Am. Geog. Soc., Bull., vol. 35, pp. 325-352, 4 figs., 1903.
Describes the earthquake of April, 1902, and its effects, the volcanoes and their eruptions, more particularly that of Santa Maria of October 24, 1902, the character of the ejected material, and the physiographic changes produced.

Eldridge (George H.).

1. The asphalt and bituminous rock deposits of the United States.

U. S. Geol. Surv., 22d Ann. Rept., pt. 1, pp. 209-452, 34 pls., 52 figs., 1901.
Describes the character and geologic occurrence of these materials in the United States.

2. The petroleum industry of California.

Eng. & Mg. Jour., vol. 73, p. 41, 1902.
Describes the general developments in 1901.

3. Origin and distribution of asphalt and bituminous rock deposits in the United States.

U. S. Geol. Surv., Bull. no. 213, pp. 296-305, 1903.
Describes classification, character, occurrence, origin, and distribution of asphalts and bituminous rocks of the United States.

4. The petroleum fields of California.

U. S. Geol. Surv., Bull. no. 213, pp. 306-321, 1903.
Describes briefly the location and extent of the oil fields and their topographic and geologic structure and production.

Elftman (A. H.).

1. The Highland range in Minnesota.

   Eng. & Mg. Jour., vol. 75, pp. 447–448, 1903.
   Describes the geology of the range.

2. Keewatin and Laurentide ice sheets in Minnesota.

   Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 536–537. 1903.
   Notes on the ice invasion.

Ellis (E. E.).

1. Zinc and lead mines near Dodgeville, Wis.

   U. S. Geol. Surv., Bull. no. 260, pp. 311–315, 1905.
   Describes production, occurrence, and character of zinc and lead ores near Dodgeville, Wis.

Ellis (Mary).

1. Index to publications of the New York State Natural History Survey and New York State Museum, 1837–1902; also including other New York publications on related subjects.

   N. Y. State Mus., Bull. 66, 653 pp., 1903.
   Includes a list of the publications, an alphabetic author and subject index, and an index to descriptions of genera and species of fossils, compiled under the direction of John M. Clarke, State paleontologist.

Ells (R. Hugh).

1. Prince Edward and Hastings counties, Ontario.

   Can. Geol. Surv., Summ. Rept. for 1903, pp. 133–136, 1904.
   Gives notes upon the geology of these counties.

Ells (R. W.).

1. The physical features and geology of the Paleozoic basin between the Lower Ottawa and St. Lawrence rivers.

   Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 6, sect. 4, pp. 99–120, 1900.
   Describes the character and occurrence of the Paleozoic rocks and the structure of the region.

2. Report on the geology of the Three Rivers map sheet or northwestern sheet of the eastern townships map, Quebec.

   Can. Geol. Surv., new ser., vol. 11, Rept. J., 70 pp., 4 pls., 1901. Published in 1900.
   Describes the physiography, the character, and occurrence of the Ordovician, Silurian, and Pleistocene deposits and economic resources of the region.

3. The Carboniferous basin in New Brunswick.

   Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 7, sect. 4, pp. 45–56, 1901. Abstract: Science, new ser., vol. 13, p. 1017, 1901.
   Discusses the geologic structure and location of coal seams in this area.

4. The Devonian of the Acadian provinces.

   Can. Rec. Sci., vol. 8, pp. 335–343, 1901.
   Reviews previous geologic work on the Devonian strata of the region and discusses the problems involved.

5. Ancient channels of the Ottawa River [Canada].

   Ottawa Nat., vol. 15, pp. 17-30, 1 map, 1901.
   Describes glacial phenomena of the region.

6. Marl deposits in Ontario, Quebec, New Brunswick, and Nova Scotia.

   Ottawa Nat., vol. 16, pp. 59–69, 1902.
   Describes the general character and distribution of the deposits.

7. Report on the geology and natural resources of the area included in the map of the city of Ottawa and vicinity.

   Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 1G–48G, 5 pls., map, 1902.
   Describes geologic structure and formations and economic minerals of this area.

8. Report on the geology of Argenteuil, Ottawa, and part of Pontiac counties, Province of Quebec, and portions of Carleton, Russell, and Prescott counties, Province of Quebec.

   Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 1J–138J, 5 pls., map, 1902.

Ells (R. W.)—Continued.

9. The district around Kingston, Ontario.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 170–183, 1902.

Describes the author's observations in this area.

10. Bulletin on asbestus.

Can. Geol. Surv., Min. Res. of Canada, Bull. on Asbestus, 28 pp., 1903.

Describes the character and occurrence of asbestos deposits in Canada, and the mining operations.

11. The progress of geological investigation in Nova Scotia.

Nova Scotian Inst. Sci., Proc. & Trans., vol. 10, pp. 433–446, 1903.

12. The oil fields of Gaspé [Quebec].

Can. Geol. Surv., Summ. Rept. for 1902, pp. 338–361, 1903.

Describes the geologic structure of the field, the conditions requisite for oil production, and the explorations for oil.

13. The Albert shale deposits of Albert and Westmoreland Counties, New Brunswick.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 361–367, 1903.

Describes the occurrence and character of the oil shales.

14. Report on the geology of Prince Edward Island with reference to proposed borings for coal.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 367–377, 1903.

15. Notes on some interesting rock-contacts in the Kingston district, Ontario.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 9, sect. 4, pp. 97–108, 1903.

Describes observations upon the character, occurrence, and geologic relations of formations of Cambrian and Ordovician age in Quebec and Ontario.

16. The recent landslide on the Lièvre River, Province of Quebec.

Can. Geol. Surv., Summ. Rept. for 1903, pp. 136–139, 1 map, 1904.

17. Charlotte County, New Brunswick.

Can. Geol. Surv., Summ. Rept. for 1903, pp. 150–160, 1904.

Gives notes upon the geology and economic mineral resources of this area.

18. Graphite in Canada.

Can. Geol. Surv., Min. Res. of Can., Bull. on Graphite, 30 pp., 1904.

Describes the occurrence in Canada, particularly in Ontario, and the mining operations.

19. Bulletin on apatite (phosphate of lime).

Can. Geol. Surv., Min. Res. of Can., Bull. on Apatite, 32 pp., 1904.

Describes the occurrence of deposits of apatite in Ontario and Quebec, and the mining operations.

20. Report on the geology of portions of the counties of Renfrew, Addington, Frontenac, Lanark, and Carleton [Ontario].

Can. Geol. Surv., Ann. Rept., vol. 14, pt. J, pp. 1–79, 1904.

Describes the occurrence, characters, and relations of sedimentary, igneous, and metamorphic rocks, and the occurrence of various ore deposits of economic importance.

21. Mica deposits of Canada.

Can. Geol. Surv., Min. Res. of Can., Bull. on Mica, 32 pp., 1904.

Describes the occurrence of mica in British Columbia, Ontario, and Quebec, and the mining operations.

22. On the ores of copper in Nova Scotia, New Brunswick, and Quebec.

Can. Geol. Surv., Min. Res. of Can., Bull. on Copper, 58 pp., 1904.

23. Nicola coal-basin, B. C.

Can. Geol. Surv., Summ. Rept. for 1904, pp. 42–74, 1 map, 1905.

Gives observations on the geology of the region and the occurrence, characters, and relations of Tertiary coal deposits.

24. Geology of Charlotte County, New Brunswick.

Can. Geol. Surv., Summ. Rept. for 1904, pp. 271–279, 1905.

25. Some interesting problems in New Brunswick geology.

Can. Roy. Soc., Trans., 2d ser., vol. 11, sect. 4, pp. 21–35, 1905.

Discusses the occurrence and relations of various Paleozoic stratified rocks and rocks of volcanic origin in New Brunswick.

Elmore (C. J.).

1. A comparison of fossil diatoms from Nebraska with similar deposits at St. Joseph, Mo., and at Denver, Colo.

   Nebr. St. Hist. Soc., Proc. and Coll., 2d ser., vol. 2, pp. 238-242, 1898.
   Gives lists of species identified from Tertiary deposits.

Elrod (Morton John).

1. The physiography of the Flathead Lake region [Montana].

   Mont. Univ., Bull. no. 16 [17], pp. 197-203, illus., 1903.

Elrod (Moses N.).

1. Niagara group unconformities in Indiana.

   Ind. Acad. Sci., Proc. for 1901, pp. 205-215, 3 figs., 1902.

Emerson (Benjamin Kendall).

1. Note on corundum and a graphitic essonite from Barkhamsted, Conn.

   Am. Jour. Sci., 4th ser., vol. 14, pp. 234-236, 1902.
   Describes the occurrence and characters of garnet and corundum.

2. Two cases of metamorphosis without crushing.

   Am. Geol., vol. 30, pp. 73-76, 1902.
   Describes an amygdaloidal amphibolite and a porphyritic mica schist.

3. Holyokeite, a purely feldspathic diabase from the Trias of Massachusetts.

   Jour. Geol., vol. 10, pp. 508-517, 1902.
   Describes the mineralogic and chemical characters of the rocks.

4. Glacial cirques and rock-terraces on Mount Toby, Massachusetts.

   Abstract: Science, new ser., vol. 17, p. 224, 1903.

5. A plumose diabase containing sideromelan and spherulites of calcite and blue quartz.

   Abstract: Science, new ser., vol. 17, p. 296, 1903.

6. General geology. Notes on the stratigraphy and igneous rocks [of Alaska].

   Harriman Alaska Expedition, vol. 4, pp. 11-56, 5 pls., 13 figs., 1904.
   Describes the geology of points visited by the Harriman Alaska expedition, including the occurrence and character of igneous, metamorphic, and sedimentary rocks in Alaska, the petrographic characters of various rocks collected, and the age and correlation of fossil-bearing formations.

7. Note on a calcite-prehnite cement rock in the tuff of the Holyoke Range.

   Am. Jour. Sci., 4th ser., vol. 17, pp. 277-278, 1904.
   Describes the character and occurrence of this rock.

8. Notes on some rocks and minerals from north Greenland and Frobisher Bay.

   Am. Geol., vol. 35, pp. 72-94, 1 pl., 1905.

9. Plumose diabase and palagonite from the Holyoke trap sheet.

   Geol. Soc. Am., Bull., vol. 16, pp. 91-130, 9 pls., 1905.
   Describes the character and occurrence of inclusions in and components of the trap of Holyoke, Mass., and gives an explanation of the formation of the holyokeite and palagonite and their inclusions.

Emerson (Benjamin K.) and **Loomis** (F. B.).

1. On Stegomus longipes, a new reptile from the Triassic sandstones of the Connecticut Valley.

   Am. Jour. Sci., 4th ser., vol. 17, pp. 377-380, 1 pl., 1904.

Emerson (Benjamin K.), **Perry** (Joseph H.) and.

1. The geology of Worcester, Massachusetts.

   See **Perry** (J. H.) and **Emerson** (B. K.), 1.

Emerson (Harrington).

1. The coal resources of the Pacific.

   Eng. Mag., vol. 23, pp. 161-182, 18 figs., 1902.
   Contains notes on the distribution of coal in this region.

Emerson (J. S.).

1. Some characteristics of Kau [Hawaii].

Am. Jour. Sci., 4th ser., vol. 14, pp. 431-439, 1902.

Describes the physiography of the region and discusses the evidences regarding the source of certain eruptions.

Emerson (Philip).

1. Note on glacial topography in central New Hampshire.

Appalachia, vol. 10, pp. 299-303, 1904.

Describes physiographic features in central New Hampshire.

Emmens (Newton W.).

1. The Bingham mining camp [Utah].

Mg. Mag., vol. 12, pp. 457-464, 5 figs., 1905.

Includes brief notes on the geology, and the occurrence and character of the copper ores.

Emmons (N. H.).

1. The value of ores in Mexico.

Mg. & Sci. Press., vol. 84, p. 102, 1902.

Emmons (Samuel Franklin).

1. The secondary enrichment of ore deposits.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 177-217, 1901.

Discusses the process of the secondary enrichment of sulphide ore bodies by transference and reconcentration of the alteration products of the original vein materials by descending surface waters and the chemical reactions which take place. Describes the author's observations in various mining districts and discusses their bearing on these problems.

2. Notes on two desert mines in southern Nevada and Utah.

Abstract: Science, new ser., vol. 13, pp. 426-427, 1901.

Contains abstract of paper read before the Geological Society of Washington.

3. The Delamar and the Horn-Silver mines; two types of ore-deposits in the deserts of Nevada and Utah.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 658-683, 10 figs., 1902.

Describes topography and geologic structure of the region, characters of the ore and history and development of these mines.

4. [In discussion of "The origin of ore-deposits."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 953-959, 1902.

5. Clarence King.

Am. Jour. Sci., 4th ser., vol. 13, pp. 224-237, 1902.

Includes an account of his life and work and a bibliography of his publications.

6. Tributes to Clarence King.

Eng. & Mg. Jour., vol. 73, pp. 3-5, por., 1902.

Gives an account of his life and work and a list of his publications.

7. The U. S. Geological Survey in its relation to the practical miner.

Eng. & Mg. Jour., vol. 74, p. 43, 1902.

8. [Discussion of James W. Malcolmson's paper on "The Sierra Mojado, Coahuila, Mexico, and its ore-deposits."]

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 566-567, 1902.

Discusses the age of the beds, the structure of the mountains, and the distribution of the ores.

9. The Little Cottonwood granite body of the Wasatch Mountains.

Am. Jour. Sci., 4th ser., vol. 16, pp. 139-147, 1 fig., 1903.

Discusses the geologic relations and age of this granitic mass.

10. Investigation of metalliferous ores.

U. S. Geol. Surv., Bull. no. 213, pp. 15-28, 1903.

Describes the character and scope of the economic work of the U. S. Geological Survey, gives brief outlines of economic publications on metalliferous deposits by the Survey during 1901, and enumerates by geographic areas the work in hand.

Emmons (Samuel Franklin)—Continued.

11. Platinum in copper ores in Wyoming.

U. S. Geol. Surv., Bull. no. 213, pp. 94-97, 1903.

Gives a brief account of the topography and geology of the Medicine Bow Range in Wyoming and the occurrence of platinum in the copper ores of the New Rambler mine.

12. [In discussion of paper by W. P. Jenney, "The mineral crest, or the hydrostatic level attained by the ore-depositing solutions in certain mining districts of the Great Salt Lake Basin."]

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1062-1063, 1903.

13. The drainage of the valley of Mexico.

Abstract: Science, new ser., vol. 17, p. 309, 1903.

14. Genetic classification of ore deposits.

Abstract: Science, new ser., vol. 17, pp. 541-542, 1903.

15. Theories of ore deposition historically considered.

Geol. Soc. Am., Bull., vol. 15, pp. 1-28, 1904. Eng. & Mg. Jour., vol. 77, pp. 117-119, 157-159, 199-200, 237-238, 1904. New Zealand Mines Record, vol. 7, pp. 384-387, 426-429, 1904. Sci. Am. Suppl., vol. 60, pp. 25046-25047, 25062-25064, 25078-25079, 1905. Smith. Inst., Ann. Rept. for 1904, pp. 309-336, 1905.

Reviews in chronologic order the various theories held at different periods of time regarding the origin of ore deposits.

16. The Virginius mine.

Eng. & Mg. Jour., vol. 77, p. 311, 1 fig., 1904.

Gives observations upon the occurrence and geologic relations of the ore bodies of copper and galena.

17. Investigation of metalliferous ores.

U. S. Geol. Surv. Bull. no. 225, pp. 18-24, 1904.

Gives a short summary statement respecting the economic publications of the preceding year relating to metalliferous ores and the field work carried on in this division.

18. Occurrence of copper ores in Carboniferous limestone in the region of the Grand Canyon of the Colorado.

Abstract: Science, new ser., vol. 20, pp. 760-761, 1904.

19. Investigation of metalliferous ores.

U. S. Geol. Surv., Bull. no. 260, pp. 19-27, 1905. Reviews the publications of the U. S. Geological Survey during the year 1904 upon metalliferous ores, and the economic work in progress during the year.

20. Copper in the Red Beds of the Colorado Plateau region.

U. S. Geol. Surv., Bull. no. 260, pp. 221-232, 1905.

Discusses the occurrence of copper ores in foreign and American Red Beds of Permian and Triassic age, and their origin, and more particularly an occurrence in the Colorado Plateau region of Arizona.

21. The Cactus copper mine, Utah.

U. S. Geol. Surv., Bull. no. 260, pp. 242-248, 1 fig., 1905.

Describes the location and history of the mine, the general geology, and the character and occurrence of the copper ores.

22. Economic geology of the Bingham mining district, Utah.

U. S. Geol. Surv., Professional Paper no. 38, pp. 17-25, 1905.

Describes the general geology of the region, and the occurrence and character of Carboniferous sedimentary strata, and of igneous rocks.

Emmons (S. F.), **Hayes** (C. W.)., geologists in charge.

1. Contributions to economic geology, 1902.

U. S. Geol. Surv., Bull. no. 213, 449 pp., 1903.

Contains reports by different members of the staff of the U. S. Geological Survey of the economic results of investigations made by the Geological Survey, and bibliographies of the subjects treated.

2. Contributions to economic geology, 1903.

U. S. Geol. Surv., Bull. no. 225, 527 pp., 1 pl., 11 figs., 1904.

Emmons (S. F.), **Hayes** (C. W.)—Continued.

3. Contributions to economic geology, 1904.

U. S. Geol. Surv., Bull. no. 260, 1905. 620 pp., 4 pls., 25 figs.

Includes papers by various members of the U. S. Geological Survey on economic resources which they have had under investigation. With each section is given a list of the Survey publications bearing upon the products treated in that section.

Emmons (S. F.), **Irving** (John Duer) and.

1. Economic resources of the northern Black Hills. Part II. Mining geology.

See **Irving** (John Duer) and **Emmons** (S. F.), 1.

Emmons (William H.).

1. The Neglected mine and Nearby properties, Durango quadrangle, Colorado.

U. S. Geol. Surv., Bull. no. 260, pp. 121–127, 1905.

Describes the general geology, the character and occurrence of ores containing gold and silver, and the mining operations.

Emmons (W. H.), **Irving** (J. D.) and.

1. Economic geology of the Needle Mountains quadrangle [Colorado].

See **Irving** (J. D.) and **Emmons** (W. H.), 1.

Evans (A. W.).

1. Jellico coal field.

Eng. Assoc. South, Trans., 1904, vol. 15, pp. 43–52 [1905].

Discribes the occurrence, composition, and qualities of coals of the Jellico field in Kentucky and Tennessee.

Evans (H. F.).

1. Canadian geology.

Mg. & Sci. Press, vol. 86, pp. 299–300, 1903.

Gives a general account of the geology of Canada.

2. The Adams Lake series, British Columbia.

Mg. & Sci. Press, vol. 86, pp. 348–349, 1903.

Describes the occurrence of this formation and the strata associated with it, and discusses its geologic relations and age.

Evans (Herbert M.).

1. A new cestraciont spine from the lower Triassic of Idaho.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 397–401, 1 pl., 1904.

Evans (Nevil Norton).

1. Native arsenic from Montreal.

Am. Jour. Sci., 4th ser., vol. 15, pp. 92–93, 1903.

2. Chrysoberyl from Canada.

Am. Jour. Sci., 4th ser., vol. 19, pp. 316–318, 1905.

Describes the occurrence of chrysoberyl in the province of Quebec, and the method and results of a chemical examination thereof.

Eyerman (John).

1. Contributions to mineralogy.

Am. Geol., vol. 34, pp. 43–48, 1904.

Describes the occurrence, characters, and composition of some minerals from New Jersey and Pennsylvania.

F.

Fairbanks (Harold W.).

1. Notes on the geology of the Three Sisters, Oregon.

Abstract: Jour. Geol., vol. 9, p. 73, 1901; Geol. Soc. Am., Bull., vol. 12, pp. 498–499, 1901.

Brief notes on occurrence of volcanic rocks.

2. Pyramid Lake, Nevada.

Pop. Sci. Mo., vol. 58, pp. 505–514, 8 figs., 1901.

Describes the geological history of the lake and adjacent region and the characteristics of the volcanic materials.

3. The physiography of California.

Am. Bur. Geog., Bull., vol. 2, pp. 232–252, 329–353, 10 figs., 1901.

Fairbanks (Harold W.)—Continued.

4. Lake Chelan, Washington.

Abstract: Science, new ser., vol. 15, pp. 412–413, 1902.

Describes physiographic changes which have taken place in this region.

5. The physiography of southern Arizona and New Mexico.

Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Jour. Geol., vol. 11, pp. 97–99, 1903.

6. Gypsum deposits in California.

U. S. Geol. Surv., Bull. no. 223, pp. 119–123, 1 pl., 1904.

Describes character, occurrence, and geologic relations of the gypsum deposits of California.

7. San Luis folio, California.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 101, 1904.

Describes topography and drainage, climate and vegetation, the character, occurrence, and relations of Juratrias (?), Cretaceous, and Tertiary sedimentary rocks and included igneous rocks, the geologic structure and history of the area, the development of the physiographic features, and the economic resources and soils.

Fairchild (Herman Le Roy).

1. Beach structure in Medina sandstone.

Am. Geol., vol. 28, pp. 9–14, 3 pls., 1901.

Discusses the evidences indicating the origin of the ripple marks in the Medina sandstone of New York.

2. Pleistocene geology of western New York, report of progress for 1900.

N. Y. State Mus., 54th Ann. Rept., vol. 1, pp. r103–r139, 33 pls., 1902.

Discusses the occurrence and deformation of the Iroquois shore line and gives results of recent studies in the Syracuse-Oneida and Cattaraugus-Chautauqua districts.

3. Elements of geology: a text-book for colleges and the general reader by Joseph Le Conte. Revised and partly rewritten by Herman Le Roy Fairchild.

See **Le Conte** (Joseph), 4.

4. Latest and lowest pre-Iroquois channels between Syracuse and Rome.

N. Y. State Mus., 55th Ann. Rept., pp. r31–r47, 25 pls., 1903.

Describes the occurrence and formation of river channels formed during the Glacial period in central New York.

5. Direction of pre-Glacial stream flow in central New York.

Am. Geol., vol. 33, pp. 43–45, 1904.

6. Geology under the new hypothesis of earth origin.

Am. Geol., vol. 33, pp. 94–116, 1904.

Compares the sufficiency of the nebular and planetesimal hypotheses and discusses the explanation given by the latter of the origin of the atmosphere and ocean, volcanic phenomena, deposits of hydrocarbons, ores, salt, and gypsum, climate in geologic time, glaciation, crustal movements, and life on the earth.

7. Geology under the planetesimal hypothesis of earth origin.

Geol. Soc. Am., Bull., vol. 15, pp. 243–266, 1904.

See preceding entry. Includes discussion by Edward H. Kraus, Willis T. Lee, Israel C. Russell, and Frederick W. Sardeson.

8. Glacial waters from Oneida to Little Falls [New York].

N. Y. State Mus., 56th Ann. Rept., vol. 1, and N. Y. State Geol., 22d Rept., pp. r17–r41, 26 pls. 1904.

Describes the position and extent of waters along the ice front, and the drainage at different stages of the Glacial epoch in north central New York, as determined from the occurrence, character, etc., of Glacial deposits.

9. Glacial drainage in central western New York.

Abstract: Geol. Soc. Am., Bull., vol. 14, p. 553, 1904.

10. Evidences of slight glacial erosion in western New York.

Abstract: Sci. Am. Suppl., vol. 57, p. 23447, 1904.

11. Ice erosion theory a fallacy.

Geol. Soc. Am., Bull., vol. 16, pp. 13–74, 12 pls., 6 figs., 1905.

Discusses the character of glacial erosion and presents evidence to show that deep valleys and the finger lakes of New York could not have been produced by erosion.

Fairchild (Herman Le Roy)—Continued.

12. Pleistocene features in the Syracuse region [New York].

Am. Geol., vol 36, pp. 135–141, 2 pls., 1905.

13. The local glacial features [of the vicinity of Syracuse, N. Y.].

Abstract: Science, new ser., vol. 22, pp. 333–334, 1905.

14. Some new problems in glaciology.

Abstract: Science, new ser., vol. 22, p. 335, 1905.

Falconer (J. D.)

1. Volcanic dust from the West Indies.

Nature, vol. 66, p. 132, 1902.
Brief note on the character of the dust from recent eruptions.

2. The evolution of the Antilles.

Scot. Geog. Mag., vol. 18, pp. 369–376, 1 pl., 1902.
Dicsusses the general geologic history of America and more particularly that of Central America and the West Indies.

Fall (Delos).

1. Marls and clays in Michigan.

Mich. Miner, vol. 3, no. 11, pp. 11–14, 1901.
Discusses occurrence of materials in Michigan for making Portland cement.

2. Marls and clays in Michigan.

Mich. Geol. Surv., vol. 8, pt. 3, pp. 343–353, 1903.
Discusses occurrence, composition, and character of marls and clays in Michigan with especial reference to their use in the manufacture of Portland cement.

Faribault (E. Rodolphe).

1. Nova Scotia gold fields.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 214–221, 1902.
Describes observations in this area.

2. Nova Scotia gold fields.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 399–427, 1903.
Describes geologic investigations made in the gold-producing districts of Nova Scotia.

3. Gold fields of Nova Scotia.

Can. Geol. Surv., Summ. Rept. for 1903, pp. 174–186, 1904.
Describes the occurrence and relations of the gold-ore deposits and the mining operations.

4. Gold fields of Nova Scotia.

Can. Geol. Surv., Summ. Rept. for 1904, pp. 319–332, 1905.

Farnsworth (P. J.).

1. When was the Mississippi River Valley formed?

Am. Geol., vol. 28, pp. 393–396, 1901.
Discusses the geologic history of the region.

Farrington (Oliver Cummings).

1. On the nature of the metallic veins of the Farmington meteorite.

Am. Jour. Sci., 4th ser., vol. 11, pp. 60–62, 1 fig., 1901.

2. The structure of meteorites.

Jour. Geol., vol. 9, pp. 51–66, 6 figs., pp. 174–190, 5 figs., 1901.
Describes the various structural features of meteorites and discusses their origin.

3. The constituents of meteorites.

Jour. Geol., vol. 9, pp. 393–408 and 522–532, 1901.
Describes the character and occurrence of the mineral constituents of meteorites.

4. The pre-terrestrial history of meteorites.

Jour. Geol., vol. 9, pp. 623–632, 1901.
Discusses the evidences indicating the probable structure of meteorites before reaching the earth.

5. Observations on Indiana caves.

Field Col. Mus., Geol. Ser., vol. 1, pp. 247–266, 2 pls., 8 figs., 1901.

Farrington (Oliver Cummings)—Continued.

6. Meteorite studies.

Field Col. Mus., Geol. Ser., vol. 1, pp. 283–315, 4 pls., 6 figs., 1902.
Describes meteorites from Kansas, Mexico, and Ohio.

7. A new meteorite from Kansas.

Science, new ser., vol. 16, pp. 67–68, 1902.
Gives an account of the discovery and characters of this meteorite.

8. The meteorites of northwestern Kansas.

Abstract: Science, new ser., vol. 16, p. 260, 1902.

9. Catalogue of the collection of meteorites, May 1, 1903.

Field Col. Mus., Geol. Ser., vol. 2, pp. 79–124, 10 pls., 1903.
The alphabetic list of meteorites includes notes on the character and source of the specimens, some of which are figured.

10. An occurrence of free phosphorus in the Saline Township meteorite.

Am. Jour. Sci., 4th ser., vol. 15, pp. 71–72, 1903.

11. Meteorites of northwestern Kansas.

Abstract: Geol. Soc. Am., Bull., vol. 14, p. 6, 1903.

12. Gems and gem minerals.

Chicago, A. W. Mumford, 1903. 229 pp., 16 pls., 61 figs.

13. Observations on the geology and geography of western Mexico, including an account of the Cerro Mercado.

Field Col. Mus., Geol. Ser., vol. 2, pp. 197–228, 16 pls., 5 figs., 1904. Abstract: Geol. Soc. Am., Bull., vol. 15, pp. 549–550, 1904.
Describes physiographic features, climatic conditions, the general geology and silver-mining developments of this part of Mexico, and in detail the Cerro Mercado (Iron Mountain), particularly the occurrence and characters of the iron ore, minerals, and rocks.

14. The geographical distribution of meteorites.

Pop. Sci. Monthly, vol. 64, pp. 351–354, 1904.

15. The Rodeo meteorite.

Field Col. Mus., Geol. Ser., vol. 3, pp. 1–6, 4 pls., 1905.
Describes the history, characters, and composition of this meteorite found in the State of Durango, Mexico.

Farrington (Oliver Cummings), **Riggs** (Elmer S.) and.

1. The Dinosaur beds of the Grand River Valley of Colorado.

See **Riggs** (E. S.) and **Farrington** (O. C.), 1.

Fawns (Sydney).

1. Tin deposits of the world.

London, The Mining Journal, 1905. xii, 240 pp., 23 pls., 34 figs.
Includes notes on the occurrence of tin deposits in the United States and Alaska.

Felix (J.).

1. Geologiai úti vázlatok észak-amerikából. Geologische Reiseskizzen aus Nord-amerika.

Földtani Közlöny, vol. 25, pp. 5–29, 69–94, 1 pl. and 1 fig., 1895.
Gives observations of a geological nature made during a tour through the United States and Canada, particularly upon the glaciers and petrography of the Cascade Mountains.

Felix (Johannes) and **Lenk** (Hans).

1. Bemerkungen zur topographie und geologie von Mexico.

Zeitsch. d. deutsch. geol. Gesell., vol. 54, pp. 426–440, 1902.
Contains observations on the topography and geology of Mexico.

Fell (E. Nelson).

1. The Canadian Mining Institute.

Eng. & Mg. Jour., vol. 73, p. 411, 1902.

Fellows (A. L.).

1. Water resources of the State of Colorado.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 74, 151 pp., 14 pls., 5 figs., 1902.

Fenneman (N. M.).

1. On the lakes of southeastern Wisconsin.

Wis. Geol. & Nat. Hist. Surv., Bull. no. 8, 178 pp., 36 pls., 1902.
Discusses the geology, physiography, and formation of lakes of this region.

2. Development of the profile of equilibrium of the subaqueous shore terrace.

Jour. Geol., vol. 10, pp. 1-32, 10 figs., 1902.

3. The Arapahoe glacier in 1902 [Colorado].

Jour. Geol., vol. 10, pp. 839-851, 8 figs., 1902.
Describes the moraines and crevasses of this glacier.

4. The Boulder, Colo., oil field.

U. S. Geol. Surv., Bull. no. 213, pp. 322-332, 1903.
Describes location, general geologic structure and development of the field, the character and occurrence of the oil-bearing strata, and the production of oil.

. Structure of the Boulder oil field, Colorado, with records for the year 1903.

U. S. Geol. Surv., Bull. no. 225, pp. 383-391, 1 fig., 1904.
Describes the location and geologic structure of the field and the occurrence and production of petroleum.

6. Effect of cliff erosion on form of contact surfaces.

Geol. Soc. Am., Bull., vol. 16, pp. 205-214, 4 figs., 1905.
Discusses the relations of shore erosion and subsidence and the application to the contact of the Archean granite and Wyoming sandstone in the front range of the Rocky Mountains in northern Colorado.

7. Oil fields of the Texas-Louisiana coastal plain.

Mg. Mag., vol. 11, pp. 313-322, 6 figs., 1905.
Includes a short account of the geological structure of the oil fields.

8. Oil fields of the Texas-Louisiana gulf coast.

U. S. Geol. Surv., Bull. no. 260, pp. 459-467, 1905.
Describes the location and condition of the various oil fields in this region, and discusses the prospecting for oil, the surface indications, and the structure and origin of the oil-producing mounds.

9. The Florence, Colo., oil field.

U. S. Geol. Surv., Bull. no. 260, pp. 436-440, 1905.
Describes the location and structure of the field, the occurrence of the oil, and the economic developments.

10. Geology of the Boulder district, Colorado.

U. S. Geol. Surv., Bull. no. 265, 101 pp., 5 pls., 11 figs., 1905.
Describes the physiography and drainage, the character, occurrence, and relations of Algonkian, Triassic (?), Jurassic, and Cretaceous sedimentary rocks, and of intrusive rocks, the geologic history of the area, and the economic geology, particularly the occurrence of oil and gas.

Fernie (W. Blakemore).

1. The Frank disaster [Alberta].

Can. Mg. Rev., vol. 22, pp. 121-122, 1903.
Discusses the cause of the landslide.

Finch (Grant E.).

1. A terrace formation in the Turkey River Valley, in Fayette County, Iowa.

Iowa Acad. Sci., Proc., vol. 8, pp. 204-206, 1 pl., 1901.
Describes the structure and formation of the bluffs.

2. Notes on the position of the individuals in a group of Nileus vigilans found at Elgin, Iowa.

Iowa Acad. Sci., Proc., vol. 11, pp. 179-181, 1 pl., 1904.

Finch (John Wellington).

1. The circulation of underground aqueous solutions and the deposition of lode ores.

Colo. Sci. Soc., Proc., vol. 7, pp. 193-252, 1904. Ores & Metals, vol. 13, no. 12, pp. 19-22; no. 13, pp. 22-24; no. 14, pp. 21-24, 1904.
Discusses underground water and the formation of ore deposits.

Finch (John Wellington)—Continued.

2. State geological survey for Colorado.

Mg. Rep., vol. 51, pp. 217-218, 1905.

Finlay (George Irving).

1. The granite of Barre, Vermont.

Abstract: Science, new ser., vol. 13, p. 509, 1901; N. Y. Acad. Sci., Annals, vol. 14, pp. 101-102, 1901.

Briefly describes megascopic and microscopic characters.

2. Preliminary report of field work in the town of Minerva, Essex County [New York].

N. Y. State Mus., 54th Ann. Rept., vol. 1, pp. r96-r102, 1 pl., 1902; Columbia Univ., Geol. Dept., Contr., vol. 11, no. 92, 1903.

Describes geologic structure and petrology of this area.

3. The granite area of Barre, Vermont.

Vt. Geol. Surv., Rept. State Geol., III, pp. 46-60, 5 pls., 1902; Columbia Univ., Contr. Geol. Dept., vol. 10, no. 87.

Discusses topography, geology, and petrology of this area.

4. Igneous rocks of the Algonkian series.

Geol. Soc. Am., Bull., vol. 13, pp. 349-352, 1902.

Describes characters and occurrence of igneous rocks of the Algonkian series in Lewis and Livingston ranges, Montana.

5. Geology of the San Pedro district, San Luis Potosi, Mexico.

School of Mines Quart., vol. 25, pp. 60-69, illus., 1903; Columbia Univ., Dept. Geol., Contr., vol. 12, no. 101, 1903.

Describes the general geology of the region, the character and occurrence of the rocks and ore deposits, chiefly gold, silver, and lead, and discusses the origin of the latter.

6. Geological observations along the northern boundary of Montana.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 68-69, 1903.

7. The geology of the nephelite syenite area at San José, Tamaulipas, Mexico.

Abstract: Am. Geol., vol. 32, pp. 63-64, 1903; Science, new ser., vol. 18, pp. 17-18, 1903.

8. The geology of the San José district, Tamaulipas, Mexico.

N. Y. Acad. Sci., Annals, vol. 14, pp. 247-295, 11 pls., 1904; Columbia Univ., Geol. Dept., Contr., vol. 11, no. 100, 1904.

Describes the topography and the general geologic structure of the region, the field relations of the igneous rocks, and in detail their petrographic characters.

Finlay (George I.) and **Kemp** (J. F.).

1. Nepheline syenite area of San José, Tamaulipas, Mexico.

Abstract: Geol. Soc. Am., Bull., vol. 14, p. 534, 1904; Science, new ser., vol. 17, p. 295, 1903.

Finlay (J. R.).

1. The mining industry of the Cœur d'Alenes, Idaho.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 235-271, 21 figs., 1903.

Describes the geologic structure of the region, the occurrence and character of the veins and ore deposits, chiefly lead, and the mining operations.

2. Mining and milling in the Cœur d'Alene, Idaho.

Eng. & Mg. Jour., vol. 75, p. 87, 1903.

Describes the general geology of the region and the occurrence of ore bodies.

3. The mining industry of the Cœur d'Alene district, Idaho. The ore formation. The production and methods of operating.

Mines & Minerals, vol. 24, pp. 497-498, 2 figs., 1904.

Abstract of paper read before the American Institute of Mining Engineers in 1902, together with comments by Arthur Lakes.

Fishback (P. J.).

1. Geological horizon of the petroleum in southeast Texas and southwest Louisiana.

Eng. & Mg. Jour., vol. 74, p. 476, 1902.

Fisher (Cassius A.).

1. Comparative value of bluff and valley wash deposits as brick material.

Nebr. State Board of Agric., Ann. Rept. for 1900, pp. 181-184, 1901.

Fisher (Cassius A.)—Continued.

2. Directory of the limestone quarries of Nebraska.

   Nebr. State Board of Agric., Ann. Rept. for 1901, pp. 243–247, 1902.

3. Discovery of the Laramie in Nebraska.

   Am. Geol., vol. 30, pp. 315–316, 1 pl., 1902.
   Describes occurrence and relations of the Laramie in southeastern Nebraska.

4. Coal fields of the White Mountain region, New Mexico.

   U. S. Geol. Surv., Bull. no. 225, pp. 293–294, 1904.
   Describes the location of the field and the occurrence and character of the coals.

5. Coal of the Bighorn basin, in northwest Wyoming.

   U. S. Geol. Surv., Bull. no. 225, pp. 345–362, 1904.
   Describes the geologic structure of the field, the character and occurrence of the coals, and the mining operations.

6. The bentonite deposits of Wyoming.

   U. S. Geol. Surv., Bull. no. 260, pp. 559–563, 1 fig., 1905.
   Describes the physical properties, occurrence, and geological relations of bentonite, a variety of clay.

Fisher (Cassius A.), **Barbour** (Erwin H.) and.

1. A new form of calcite-sand crystal.

   See **Barbour** (E. H.) and **Fisher** (C. A.), 1.

2. The geological bibliography of Nebraska.

   See **Barbour** (E. H.) and **Fisher** (C. A.), 2.

Fisher (Cassius A.), **Gould** (C. N.) and.

1. The Dakota and Carboniferous clays of Nebraska.

   See **Gould** (C. N.) and **Fisher** (C. A.), 1.

Fisher (O.).

1. On rival theories of cosmogony.

   Am. Jour. Sci., 4th ser., vol. 11, pp. 414–422, 1901.
   Discusses the meteoric and nebular theories as to the origin of the earth.

2. Mathematical notes to rival theories of cosmogony.

   Am. Jour. Sci., 4th ser., vol. 12, pp. 140–142, 1901.
   Contains mathematical notes supplementary to the author's previous paper.

Fitzhugh (G. D.).

1. Portland-cement materials of southwestern Arkansas.

   Eng. Assoc. South, Trans., 1904, vol. 15, pp. 33–42, [1905].
   Describes the occurrence and composition of chalk suitable for the manufacture of cement.

Fletcher (Hugh).

1. Geological nomenclature in Nova Scotia.

   Nova Scotian Inst. Sci., Trans., vol. 10, pp. 323–329, 1902.
   Discusses the age of the New Glasgow conglomerate.

2. Kings and Hants counties, Nova Scotia.

   Can. Geol. Surv., Summ. Rept. for 1901, pp. 208–214, 1902.
   Describes the author's observations in this area.

3. Surveys and explorations in Richmond, Cape Breton, Kings, Cumberland, and other counties in Nova Scotia.

   Can. Geol. Surv., Summ. Rept. for 1902, pp. 388–399, 1903.
   Describes geologic work in the coal fields of Nova Scotia.

4. Limits of the workable coals of the Cumberland coal fields in Nova Scotia.

   Nova Scotia Mg. Soc., Jour., vol. 8, pp. 123–126, 1904.
   Includes observations upon the geology of the region, and discusses the possibility of workable coal seams being found at certain points in the light of geological facts presented.

5. Northern part of Nova Scotia.

   Can. Geol. Surv., Summ. Rept. for 1903, pp. 160–174, 1904.
   Gives notes upon the geology and mineral resources of this area.

Fletcher (Hugh)—Continued.

6. The counties of Cumberland, Hants, Kings, and Annapolis, Nova Scotia.

Can. Geol. Surv., Summ. Rept. for 1904, pp. 293-318, 1 map, 1905.
Includes observations on the geology of the region examined, and the occurrence and relations of minerals of economic importance, especially deposits of iron ore.

Flett (John Smith).

1. Note on a preliminary examination of the ash that fell on Barbados after the eruption at St. Vincent [West Indies]. With a chemical analysis by Dr. William Pollard.

London Geol. Soc., Quart. Jour., vol. 58, pp. 368-369, 1902.

Flett (John Smith), **Anderson** (Tempest) and.

1. Preliminary report on the recent eruption of the Soufrière in St. Vincent, and of a visit to Mont Pelée, in Martinique.

See **Anderson** (Tempest) and **Flett** (J. S.), 1.

2. Preliminary report on the recent eruption of the Soufrière in St. Vincent, and of a visit to Mont Pelée, in Martinique.

See **Anderson** (Tempest) and **Flett** (John S.), 2.

3. Report on the eruptions of the Soufrière, in St. Vincent, in 1902, and on a visit to Montagne Pelée, in Martinique.

See **Anderson** (Tempest) and **Flett** (J. S.), 3.

Flink (Gust.).

1. Berättelse om en mineralogisk resa i Syd-Groenland sommaren 1897

Meddelelser om Groenland, vol. 14, pp. 221-262, 2 pls., 1898.
Describes minerals and rocks obtained from Greenland.

2. On the minerals from Narsarsuk on the firth of Tunugdliarfik in southern Greenland.

Meddelelser om Groenland, vol. 24, pp. 7-180, 9 pls., 1901.
Describes character and occurrence of minerals in this area.

Flores (Teodoro).

1. Las criaderos argentiferos de "Providencia" y "San Juan de la Chica," San Felipe (Estado de Guanajuato), [México].

Soc. Geol. Mex., Bol., t. 1, pp. 169-173, 1 map, 1905.
Describes the occurrence, character, and relations of silver deposits.

Fluck (Frank).

1. Lower Coal Measures of central Pennsylvania.

Mines & Minerals, vol. 24, p. 574, 2 figs., 1904.
Describes occurrence and character of coal seams of central Pennsylvania.

Fluker (W. H.).

1. Gold mining in McDuffie County, Georgia.

Eng. & Mg. Jour., vol. 73, pp. 725-726, 1902.
Contains general notes on the geology and gold ores of the county.

2. Gold mining in McDuffie County, Georgia.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 119-125, 1903.
Describes the occurrence of gold ore and the mining operations.

Flynn (Benjamin H.) and (Margaret S.).

1. The natural features and economic development of the Sandusky, Maumee, Muskingum, and Miami drainage areas in Ohio.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 91, 130 pp., 11 figs., 1904.
Includes a brief account of the topography and general geology of the areas considered.

Foerste (August F.).

1. Silurian and Devonian limestones of Tennessee and Kentucky.

Geol. Soc. Am., Bull., vol. 12, pp. 395-444, 7 pls., 1901.
Discusses the occurrence and lithologic character of the Ordovician, Silurian, and Devonian series in the southern portion of the Cincinnati anticline and discusses the evidences of unconformity. Gives lists of fossils from several formations at various points in the region.

Foerste (August F.)—Continued.

2. The Niagara group along the western side of the Cincinnati anticline.
   Abstract: Science, new ser., vol. 13, pp. 134-135, 1901.
3. The Cincinnati anticline in southern Kentucky.
   Am. Geol., vol. 30, pp. 359-369, 1 pl., 1902.
   Describes the relations of the Devonian, Silurian, and Ordovician formations along the Cincinnati anticline.
4. Bearing of the Clinton and Osgood formations on the age of the Cincinnati anticline.
   Abstract: Science, new ser., vol. 15, p. 90, 1902; Geol. Soc. Am., Bull., vol. 13, pp. 531-532, 1903.
5. Use of the terms Linden and Clifton limestones in Tennessee geology.
   Abstract: Science, new ser., vol. 15, p. 90, 1902; Geol. Soc. Am., Bull., vol. 13, p. 531, 1903.
6. The Cincinnati group in western Tennessee, between the Tennessee River and the Central Basin.
   Jour. Geol., vol. 11, pp. 29-45, 1 fig., 1903.
   Discusses the subdivisions of the Cincinnati group in Ohio, names and describes the subdivisions in Tennessee, and gives localities of outcrops and notes on characteristic fossils.
7. Silurian and Devonian limestones of western Tennessee.
   Jour. Geol., vol. 11, pp. 554-583, 6 figs., pp. 679-715, 4 figs., 1903.
   Describes character, occurrence, and correlation of Silurian strata along the western side of the Cincinnati geanticline in southern Indiana, Kentucky, and northern Tennessee, and of Silurian and Devonian strata in the Tennessee River Valley, and discusses evidences for the age of the Cincinnati geanticline and gives lists of fossils with brief descriptions of some forms.
8. The Richmond Group along the western side of the Cincinnati anticline in Indiana and Kentucky.
   Am. Geol., vol. 31, pp. 333-361, 3 pls., 1903.
   Discusses occurrence and lithologic, stratigraphic, and faunal features of the subdivisions of the Cincinnati series, the decrease in thickness of the Richmond group in Indiana and Kentucky, and conditions prevailing in the Cincinnati region in Ordovician times.
9. Variation in thickness of the subdivisions of the Ordovician of Indiana. With notes on the range of certain fossils.
   Am. Geol., vol. 34, pp. 87-102, 1 pl., 1904.
10. The Ordovician-Silurian contact in the Ripley Island area of southern Indiana, with notes on the age of the Cincinnati geanticline.
    Am. Jour. Sci., 4th ser., vol. 18, pp. 321-342, 2 pls. (maps), 1904.
    Discusses the stratigraphic evidence for the time of formation of the Cincinnati geanticline, the occurrence, character, and relations of Ordovician and Silurian formations in Ohio, Indiana, and Kentucky, and gives observations upon the stratigraphic position of various fossils, the relationships of Silurian faunas of Indiana with those of New York, and lists of Niagara fossils of Indiana.
11. Description of the rocks formed in the different geological periods in Indiana: Ordovician and Silurian.
    Ind., Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 21-39, 1904.
12. The classification of the Ordovician rocks of Ohio and Indiana.
    Science, new ser., vol. 22, pp. 149-152, 1905.
13. Notes on the distribution of brachiopoda in the Arnheim and Waynesville beds.
    Am. Geol., vol. 36, pp. 244-250, 1905.
    Gives notes upon the geographic distribution and geologic horizons of certain brachiopods of the Arnheim and Waynesville beds of the upper Ordovician beds of Ohio, Indiana, and Kentucky.

Fontaine (William M.).

1. The Jurassic flora of Douglas County, Oreg.
   U. S. Geol. Surv., Mon., vol. 48, pp. 48-145, 1905.
2. Report on collections from plant-bearing beds in the Jurassic, or forming the transition to the lower Cretaceous.
   U. S. Geol. Surv., Mon., vol. 48, pp. 148-179, 1905.

Fontaine (William M.)—Continued.

3. Notes on some fossil plants from the Shasta group of California and Oregon.

U. S. Geol. Surv., Mon., vol. 48, pp. 221-273, 1905.

4. Notes on some lower Cretaceous (Kootanie) plants from Montana.

U. S. Geol. Surv., Mon., vol. 48, pp. 284-315, 1905.

5. Report on various collections of fossil plants from the older Potomac of Virginia and Maryland.

U. S. Geol. Surv., Mon., vol. 48, pp. 476-580, 1905.

Foote (H. W.), **Penfield** (S. L.) and.

1. On bixbyite, a new mineral.

See **Penfield** (S. L.) and **Foote** (H. W.), 1.

2. On clinohedrite, a new mineral from Franklin, N. J.

See **Penfield** (S. L.) and **Foote** (H. W.), 2.

Foote (H. W.), **Pratt** (J. H.) and.

1. On wellsite, a new mineral.

See **Pratt** (J. H.) and **Foote** (H. W.), 1.

Foote (W. M.).

1. Complete mineral catalog. Part I, Mineral collections and material for the laboratory. Part II, Descriptive account of choice specimens. Meteorites. Price list of individual specimens. Classified table of minerals, according to Dana's System, with index. Metallurgical classification of minerals.

Philadelphia, Foote Mineral Company, [1904]. 215 pp., 29 pls.

Ford (Frederick L.).

1. The trap rock of the Connecticut Valley.

Stone, vol. 26, pp. 130-133, 1903.

Describes the character, occurrence, and geologic history of the trap rock in the vicinity of Hartford, Conn.

Ford (W. E.).

1. On the chemical composition of dumortierite.

Am. Jour. Sci., 4th ser., vol. 14, pp. 426-430, 1902.

2. Rickardite, a new mineral.

Am. Jour. Sci., 4th ser., vol. 15, pp. 69-70, 1903; Sci. Am. Suppl., vol. 55, pp. 22777-22778, 1903; Chemical News, vol. 87, pp. 56-57, 1903.

Describes occurrence and chemical composition.

3. On the chemical composition of axinite.

Am. Jour. Sci., 4th ser., vol. 15, pp. 195-201, 3 figs., 1903.

Ford (W. E.), **Penfield** (S. L.) and.

1. On calavarite.

See **Penfield** (S. L.) and **Ford** (W. E.), 1,

Forstner (William).

1. Genesis of ore deposits at the Royal mine, Hodson, Cal.

Mg. & Sci. Press, vol. 88, pp. 314-315, 7 figs., 1904.

Describes the occurrence and geologic relations of the ore bodies and discusses their origin.

2. The quicksilver deposits of California.

Eng. & Mg. Jour., vol. 78, pp. 385-386, 426-428, 5 figs., 1904.

Forsyth (Alexander).

1. [In discussion of paper by J. D. Irving "Wolframite in the Black Hills of South Dakota."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 1024-1025, 1902.

Foster (Ernest Le Neve).

1. The Colorado Central lode, a paradox of the mining law.

Colo. Sci. Soc., Proc., vol. 7, pp. 41-53, illus., 1902.

Includes some discussion of the occurrence of the ores.

Fowke (Gerard).

1. The preglacial drainage of Ohio—introduction.

   Ohio State Acad. Sci., Special Papers, no. 3, pp. 5-9, 1900.

   Reviews work previously done in deciphering preglacial drainage as an introduction to papers following.

2. Preglacial drainage conditions in the vicinity of Cincinnati [Ohio].

   Ohio State Acad. Sci., Special Papers, no. 3, pp. 68-75, map, 1900.

Fowler (George L.).

1. The coals and coal-mining methods of the Pocahontas field.

   Eng. Mag., vol. 27, pp. 217-232, illus., 1904.

   Describes the geologic occurrence, fuel value, and mining methods of the Pocahontas coal.

Fraas (E.).

1. [Origin of the Oligocene beds of the Bad Lands, South Dakota.]

   Science, new ser., vol. 14, pp. 211-212, 1901.

   Contains quotation from letter to Professor Osborn.

2. Geologische Streifzüge durch die Prärien und Felsengebirge Nordamerikas.

   Württemberg, Jahreshefte des Vereins für vaterländische Naturkunde, Stuttgart, Jahrg. 58, pp. LXV-LXVIII, 1902.

   Contains observations on the Jurassic strata of Wyoming and their vertebrate fossils, and the Bad Lands of South Dakota.

Franke (Robert P.).

1. Geology of the Cochise mining district, Arizona.

   Mg. Rep., vol. 51, p. 503, 1 fig., 1905.

Frazer (Persifor).

1. Alphabetical cross reference catalogue of all the publications of Edward Drinker Cope, from 1859 till his death in 1897.

   Soc. Cient. Ant. Alz., Mem., vol. 14, pp. 39-72, 233-256, 439-466, 1899-1900; vol. 15, pp. 31-96, 1900.

2. Memoir of Franklin Platt.

   Geol. Soc. Am., Bull., vol. 12, pp. 454-455, 1901.

   Gives a brief sketch of his life and a list of his publications.

3. The Eighth Session of the International Congress of Geologists.

   Am. Geol., vol. 27, pp. 335-342, 1901.

4. Sketch of Dr. Frenzel.

   Am. Geol., vol. 30, pp. 333-335, 1902.

5. Compte rendu, 8 Congres Geologique International, Paris, 1900.

   Am. Geol., vol. 29, pp. 110-112, 1902.

6. Catalogue chronologique des publications de Edward Drinker Cope.

   Soc. Geol. de Belgique, Annales, vol. 29, pp. BB3-77, 1902.

7. J. Peter Lesley.

   Am. Geol., vol. 32, pp. 133-136, 1 pl. (por.), 1903.

8. History of the Caribbean Islands from a petrographic point of view. (Abstract.)

   Phil. Acad. Nat. Sci., Proc., vol. 55, pp. 396-400, 1903.

   Discusses briefly the petrology of Cuba and Anglesey and its bearing on the geologic history of the Antillean region.

9. Geogenesis and some of its bearings on economic geology.

   Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 298-308, 1905.

   Reviews theories of the origin of the earth and discusses the planetesimal theory and the origin of the hydrocarbons.

10. Benjamin West Frazier.

    Am. Geol., vol. 35, pp. 263-266, 1 pl. (por.), 1905.

    Gives an account of his life.

Frech (Fritz).

1. Die geographische Verbreitung und Entwickelung des Cambrium.

Congr. géol. intern., Compt. rend. VII Sess., St. Petersburg, pp. 127-151, 1899.
In discussing the geographic distribution and development of the Cambrian, includes the Cambrian of North America.

Frizell (Joseph P.).

1. Tidal scour in harbors, or the function of tidal basins with special reference to the Harbor of Boston.

Assoc. Eng. Soc., Jour., vol. 28, pp. 78-85 and 88, 1902.
Contains notes on deposition in harbors and its removal by tidal scour.

Fuchs (Th.).

1. Ueber Parapsonema cryptophysa Clarke und deren Stellung im System.

Centralbl. f. Min., Geol. u. Pal., no. 12, pp. 357-359, 1905.
Discusses the systematic position of this Devonian fossil.

Fuller (H. T.).

1. Corundum and emery.

Drury Coll., Bradley Field Geol. Station, Bull., vol. 1, pp. 31-33, 1904.
Describes occurrence and character of deposits of corundum in Ontario, Canada.

Fuller (Myron L.).

1. Probable representatives of the pre-Wisconsin till in southeastern Massachusetts.

Jour. Geol., vol. 9, pp. 311-329, 6 figs., 1901. Abstract: Science, new ser., vol. 13, p. 664, 1901.
Describes the occurrence and character of the till at various localities and the occurrence of possible interglacial rock disintegration.

2. Etching of quartz in the interior of conglomerates.

Jour. Geol., vol. 10, pp. 815-821, 3 figs., 1902.
Discusses the evidences as to the cause and the conditions during the etching.

3. The Gaines oil field of northern Pennsylvania.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 573-627, 8 pls., 7 figs., 1902.
Describes location, topography, extent and development of the field, location, and productiveness of wells, character and geologic occurrence of oil-producing sands and the stratigraphy and geologic structure of this area.

4. The Catskill rocks in northern Pennsylvania.

Abstract: Science, new ser., vol. 15, pp. 664-665, 1902.

5. Asphalt, oil, and gas in southwestern Indiana.

U. S. Geol. Surv., Bull. no. 213, pp. 333-335, 1903.
Describes occurrence and production of oil, natural gas, and asphalt in southwestern Indiana.

6. Probable pre-Kansan and Iowan deposits of Long Island, N. Y.

Am. Geol., vol. 32, pp. 308-312, 1903,

7. The Horseheads outlet of the Glacial lakes of Central New York.

Abstract: Science, new ser., vol. 17, p. 26, 1903.
Discusses Glacial deposits and terraces in this region.

8. Ice-retreat in Glacial Lake Neponset and in southeastern Massachusetts.

Jour. Geol., vol. 12, pp. 181-197, 4 figs., 1904.
Describes occurrence and character of Glacial deposits in a part of eastern Massachusetts and discusses the disappearance and accompanying events of the Glacial ice.

9. Hyner gas pool, Clinton County, Pa.

U. S. Geol. Surv., Bull. no. 225, pp. 392-395, 1904.
Describes the occurrence of natural gas in this field and gives the record of one of the borings.

10. Water supplies from wells in southern Louisiana.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 101, pp. 74-81, 2 pls., 1904.

11. Contributions to the hydrology of eastern United States, 1903. Introduction.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 9-13, 1904.

Fuller, Myron L.—Continued.

12. Organization of the Division of Hydrology and work of the eastern section.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 15-20, 1904.
    Outlines the work of the United States Geological Survey in the investigation of underground water resources.

13. Notes on the wells, springs, and general water resources of certain eastern and central states. Introduction.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 21-26, 1904.
    Describes the collection, preparation, and utilization of data relating to underground waters, as an introduction to a series of papers by different writers on the underground water resources of certain eastern and central states.

14. Notes on the wells, springs, and general water resources of Florida.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 238-275, 1904.

15. Experiments on the pollution of deep wells in Georgia.

    Abstract: Science, new ser., vol. 19, p. 805, 1904.

16. Evidences of caves of Put-in-Bay, Ohio, on question of land tilting.

    Abstract: Science, new ser., vol. 20, p. 761, 1904.

17. Introduction to Contributions to the hydrology of eastern United States, 1904.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 9-16, 1905.
    Gives summaries of the reports comprised in the second of the series of "Contributions to the hydrology of eastern United States."

18. Triassic rocks of the Connecticut Valley as a source of water supply.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 95-112, 7 figs., 1905.
    Describes the water resources of the area. Includes an account of the geologic structure.

19. Notes on the hydrology of Cuba.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 183-199, 1905.
    Includes a brief account of the geography, topography, and geology.

20. Underground waters of eastern United States. Introduction.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, p. 17, 1905.

21. Occurrence of underground waters.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 18-40, 4 pls., 14 figs., 1905.
    Describes the relations of rainfall, run-off, evaporation, and absorption, the occurrence of underground water and its recovery by wells.

22. Underground waters of eastern United States: New Hampshire.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 57-59, 1905.
    Gives a brief account of the geology and underground waters of the state.

23. Underground waters of eastern United States: Pennsylvania.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 104-110, 1 fig., 1905.
    Describes briefly the general geology and the sources of water supply.

24. Underground waters of eastern United States: North Carolina.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 136-139, 1 fig., 1905.
    Describes the underground water resources of the state.

25. Underground waters of eastern United States: Florida.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 159-168, 1 fig., 1905.
    Describes briefly the topograpy, general geology, and underground waters of the state.

26. Underground waters of eastern United States: West Virginia.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 271-272, 1905.
    Describes briefly the physiographic belts and their underground water resources.

27. Bibliographic review and index of papers relating to underground waters published by the United States Geological Survey, 1879-1904.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 120, 128 pp., 1905.

28. Audubon's account of the New Madrid earthquake.

    Science, new ser., vol. 21, pp. 748-749, 1905.

Fuller (Myron L.)—Continued.

29. Geology of Fishers Island, New York.

Geol. Soc. Am., Bull., vol. 16, pp. 367-390, 1 pl., 11 figs., 1905.

Describes the character, occurrence, and relations of Pleistocene and drift deposits on Fishers Island, and discusses their correlation with formations of other regions.

30. Hydrologic work of the U. S. Geological Survey in the eastern United States.

Intern. Geog. Cong., Eighth, Rept., pp. 509-514, 1905.

31. Hydrologic work in eastern United States and publications on ground waters.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 9-29, 1 fig., 1905.

Describes briefly the work of the Division of Hydrology of the U. S. Geological Survey in eastern United States and the publications relating to underground waters.

32. Two unusual types of artesian flow.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 40-45, 4 figs., 1905.

33. Construction of so-called fountain and geyser springs.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 46-50, 4 figs., 1905.

34. A ground-water problem in southeastern Michigan.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 129-147, 1 pl., 3 figs., 1905.

35. Notes on certain large springs of the Ozark region, Missouri and Arkansas.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 207-210, 1905.

36. Objects, development, and results of the work of collecting well records and samples.

U. S. Geol. Surv., Bull. no. 264, pp. 12-27, 1905.

37. Failure of wells along the lower Huron River, Michigan, in 1904.

Mich. Geol. Surv., Rept. for 1904, pp. 1-29, 1 pl., 3 figs., 1905.

Gives an account of the general geology and of the condition of the water supply of the region.

38. Some results of Geological Survey work in the location of underground waters.

Eng. News, vol. 54, p. 517, 1905.

39. Artesian flows from unconfined sandy strata.

Eng. News, vol. 53, pp. 329-330, 1905.

Discusses certain unusual conditions under which flowing wells occur.

40. Pleistocene history of Fishers Island, N. Y.

Abstract: Am. Geol., vol. 35, p. 51, 1905.

41. Cause and periods of earthquakes in the New Madrid area, Missouri and Arkansas.

Abstract: Science, new ser., vol. 21, pp. 349-350, 1905.

Fuller (Myron L.) and **Alden** (William C.).

1. Gaines folio, Pennsylvania-New York.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 92, 1903.

Describes topography and drainage, character and occurrence of Devonian, Carboniferous, and Quaternary deposits, the geologic structure and history, physiography and glacial history, economic products, and discovery and development of the Gaines oil field.

2. Elkland-Tioga folio, Pennsylvania.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 93, 1903.

Describes topography and drainage, character and occurrence of Devonian, Carboniferous, and Quatenary deposits, the geologic structure, geologic, physiographic, and glacial history and economic resources.

Fuller (Myron L.) and **Ashley** (George H.).

1. Ditney folio, Indiana.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 84, 1902.

Describes geographic and topographic features, general geologic relations, Carboniferous formations and Quaternary deposits, and economic resources, chiefly coal.

Fuller (Myron L.) and **Ashley** (George H.)—Continued.

2. Recent work in the coal field of Indiana and Illinois.

U. S. Geol. Surv., Bull. no. 213, pp. 284–293, 1903.

Describes the character and occurrence of the coals in this area, and thickness and relations of the coal seams.

Fuller (Myron L.) and **Clapp** (Frederick G.).

1. Marl-loess of the lower Wabash Valley.

Geol. Soc. Am., Bull., vol. 14, pp. 153–176, 2 pls., 1903; Am. Geol., vol. 31, p. 158, 1903.

Describes character and occurrence of loess deposits in this region and discusses evidences showing their origin.

2. Patoka folio, Indiana-Illinois.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 105, 1904.

Describes topographic features, the general geologic relations, the character and occurrence of Carboniferous, Tertiary, and Quaternary formations, the geologic structure and history, the economic resources, coal, clay, and building stone, the soils, forest reserves, and water supply.

Fuller (Myron L.) and **Veatch** (A. C.).

1. Results of the resurvey of Long Island, New York.

Science, new ser., vol. 18, pp. 729–731, 1903.

Discuss the occurrence of Cretaceous and Quaternary deposits and the source of the water of artesian wells.

Fuller (Myron L.), **Darton** (Nelson H.) and.

1. Underground waters of eastern United States: Maryland.

See **Darton** (N. H.) and **Fuller** (M. L.), 1.

2. Underground waters of eastern United States: District of Columbia.

See **Darton** (N. H.) and **Fuller** (M. L.), 2.

3. Underground waters of eastern United States: Virginia.

See **Darton** (N. H.) and **Fuller** (M. L.), 3.

Fuller (Myron L.), **Lines** (E. F.), and **Veatch** (A. C.).

1. Record of deep well drilling for 1904.

U. S. Geol. Surv., Bull. no. 264, 193 pp., 1905.

Fulton (Charles H.).

1. The cyanide process in the Black Hills of South Dakota.

S. Dak. School of Mines, Bull. no. 5, pp. 1–77, 1 pl., 1902.

Furlong (Eustace L.).

1. An account of the preliminary excavations in a recently explored Quaternary cave in Shasta County, California.

Science, new ser., vol. 20, pp. 53–55, 1904.

Describes occurrence of vertebrate remains and gives lists of forms identified.

2. Preptoceras, a new ungulate from the Samwel cave, California.

Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 163–169, 2 pls., 1905.

Furlong (Eustace L.), **Sinclair** (William J.) and.

1. Euceratherium, a new ungulate from the Quaternary caves of California.

See **Sinclair** (William J.) and **Furlong** (E. L.), 1.

Furman (H. van F.).

1. Gold mining in Alaska.

Mines and Minerals, vol. 21, pp. 433–436, 4 figs., 1901.

Describes character and occurrence of gold ores in southeastern Alaska.

G.

Gale (Hoyt S.).

1. Water resources of Cowee and Pisgah quadrangles, North Carolina.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 174–176, 1905.

Gallaher (John A.).

1. Preliminary report on the structural and economic geology of Missouri.

Mo. Bur. Geol. & Mines (Mo. Geol. Surv., vol. 13), Prel. Rept., 251 pp., 68 pls., 6 figs., 1900.

Gallaher (John A.)—Continued.

2. Geology of Missouri.

Encyclopedia of the History of Missouri, New York, The Southern History Company, vol. 3, pp. 31–41, 1901.

A general account of the geology of the State of Missouri.

Gannett (Henry).

1. Profiles of rivers.

U. S. Geol. Surv., Water-Supply and Irrigation Papers no. 44, 100 pp., 11 pls., 1901.

2. Geography of Alaska.

Harriman Alaska Expedition, vol. 2, pp. 257–277, 1902.

3. Lake Chelan and its glacier [Washington].

Mazama, vol. 2, pp. 185–189, 1 pl., 1905.

Describes the formation of a gorge through glacial erosion.

Ganong (W. F.).

1. Notes on the natural history and physiography of New Brunswick.

New Brunswick Nat. Hist. Soc., Bull., no. 21 (vol. 5, pt. 1), pp. 35–92, illus., 1903.

2. Notes on the natural history and physiography of New Brunswick.

New Brunswick Nat. Hist. Soc., Bull., no. 22 (vol. 5, pt. 2), pp, 179–241, illus., 1904.

Describes physiographic history of various rivers of New Brunswick.

3. Notes on the natural history and physiography of New Brunswick.

New Brunswick Nat. Hist. Soc., Bull., no. 23 (vol. 5, pt. 3), pp. 299–343, 1905.

Describes various physiographic features, in sections, entitled: A measure of the rate of recession of the New Brunswick coast line; on the physiographic characteristics of the Renous River; on the physiographic characteristics of the Southwest Branch of the Little Southwest Miramichi River; on the physiographic characteristics of the Walkemik Basin; on geological boundaries in the Tuadook-Walkemik region.

Gardiner (J. Stanley).

1. The origin of coral reefs, as shown by the Maldives.

Am. Jour. Sci., 4th ser., vol. 16, pp. 203–213, fig. 1, 1903.

Garrey (G. H.), **Spurr** (J. E.) and.

1. Preliminary report on ore deposits in the Georgetown, Colo., mining district.

See **Spurr** (J. E.) and **Garrey** (G. H.), 1.

Garrison (F. Lynwood).

1. The genesis of limonite ores in the Appalachians.

Eng. & Mg. Jour., vol. 78, pp. 470–471, 1904.

2. The iron ores of Shady Valley, Tennessee.

Eng. & Mg. Jour., vol. 78, pp. 590–592, 1904.

Describes the geology and the occurrence, character, and relations of the iron-ore deposits.

3. Tin in the United States.

Eng. & Mg. Jour., vol. 78, pp. 830–832, 1904.

Discusses the occurrence of tin deposits.

4. Gold in Santo Domingo.

Eng. & Mg. Jour., vol. 79, pp. 1128–1130, 5 figs., 1905.

Includes brief notes on the general geology of the island.

Gaudry (Albert).

1. Observations paléontologiques dans l'Alaska.

Acad. des Sci. [Paris], Compt. rend., vol. 137, pp. 553–554, 1903.

Notes the occurrence of Quaternary mammalian remains in Alaska.

Gautier (Armand).

1. À propos de la composition des gaz des fumerolles du Mont Pelée. Remarques sur l'origine des phénomènes volcaniques.

Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 16–20, 1903.

Discusses the constitution of gases from the fumerolles of Mont Pelée and the cause of volcanic phenomena.

Gay (Ware B.).

1. [In discussion of paper on "The Richmond coal-basin, Virginia," by J. B. Woodworth.]

   Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 1011-1012, 1902.

Geikie (Archibald).

1. The founders of geology.

   Johns Hopkins Univ., George Huntington Williams Memorial lectures, vol. 1, 297 pp., 1901. Abstract: Am. Jour. Sci., 4th ser., vol. 11, p. 326, 1901.

Gidley (J. W.).

1. Tooth characters and revision of the North American species of the genus Equus.

   Am. Mus. Nat. Hist., Bull., vol. 14, pp. 91-142, 4 pls., 27 figs., 1901.

2. A new three-toed horse.

   Am. Mus. Nat. Hist., Bull., vol. 19, pp. 465-476, 1903.

3. On two species of Platygonus from the Pliocene of Texas.

   Am. Mus. Nat. Hist., Bull., vol. 19, pp. 477-481, 5 figs., 1903.

4. The fresh-water Tertiary of northwestern Texas. American Museum expeditions of 1899-1901.

   Am. Mus. Nat. Hist., Bull., vol. 19, pp. 617-635, 7 pls., 4 figs., 1903.

   Describes explorations in the Tertiary beds of northwestern Texas, and the character, occurrence, and fossil contents of Pleistocene, Pliocene, and Miocene formations.

5. Proper generic names of Miocene horses.

   Am. Mus. Nat. Hist., Bull., vol. 20, pp. 191-194, 1904.

Gidley (J. W.), **Matthew** (W. D.) and.

1. New or little-known mammals from the Miocene of South Dakota. American Museum expedition of 1903.

   See **Matthew** (W. D.) and **Gidley** (J. W.), 1.

Gilbert (Grove Karl).

1. Physical history of Niagara River [New York].

   U. S. Geol. Surv., Map of Niagara River and vicinity, 1901. Abstract: Am. Geol., vol. 27, pp. 375-377, 1901.

2. On some joint veins.

   Abstract: Science, new ser., vol. 15, pp. 84-85, 1902.

3. John Wesley Powell.

   Science, new ser., vol. 16, pp. 561-567, por., 1902.

   A sketch of his life and work.

4. John Wesley Powell: a memorial to an American explorer and scholar. Comprising articles by Mrs. M. D. Lincoln (Bessie Beach), Grove Karl Gilbert, Marcus Baker, and Paul Carus. Edited by Grove Karl Gilbert. (Reprinted from "The Open Court.")

   Chicago, The Open Court Publishing Company, 75 pp., 4 pls. (por.), 1903.

5. Powell as a geologist.

   Wash. Acad. Sci., Proc., vol. 5, pp. 113-118, 1903.

6. Proposed investigation of subterranean temperatures and gradients.

   Carnegie Inst. Wash., Yearbook no. 1, 1902, pp. 285-286, 1903.

   Presents a proposition for a deep boring, and states results to be obtained thereby.

7. John Wesley Powell.

   Smith. Inst., Ann. Rept. for 1902, pp. 633-640, por., 1903.

   Revised by the author from article published in Science, October 10, 1902. See no. 3 above.

8. Joint veins.

   Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 521-522, 1903.

   Contains brief note on joint structures in the House range, Utah.

9. A highly viscous eruption of rhyolite.

   Abstract: Science, new ser., vol. 17, p. 221, 1903.

Gilbert (Grove Karl)—Continued.

10. Physiographic belts in western New York.

Abstract: Science, new ser., vol. 17, p. 221, 1903; Sci. Am. Suppl., p. 22647, 1903.

11. Origin of Basin ranges.

Abstract: Science, new ser., vol. 17, p. 301, 1903; Geol. Soc. Am., vol. 14, p. 551, 1904.

12. Statics of a tidal glacier.

Abstract: Science, new ser., vol. 17, pp. 739–740, 1903.
Discusses the statics of tidal glaciers and their bearing upon the origin of fiords.

13. Alaska. Glaciers and glaciation.

Harriman Alaska Expedition, vol. 3, 231 pp., 27 pls., 11 figs., 1904.
Describes the occurrence and characters of the glaciers and physiographic features of Alaska.

14. Geology and paleontology [of the Harriman Alaska expedition]. Introduction.

Harriman Alaska Expedition, vol. 4, pp. 1–8, 1 pl., 1904.
Describes briefly the itinerary of the Harriman Alaska expedition and the results obtained.

15. Regulation of nomenclature in the work of the U. S. Geological Survey.

Am. Geol., vol. 33, pp. 138–142, 1904.
Notes some of the changes made in the regulations given in the Tenth Annual Report of the U. S. Geological Survey. The revised regulations appear in the Twenty-fourth Annual Report of the U. S. Geological Survey.

16. The mechanism of the Mont Pelée spine.

Science, new ser., vol. 19, pp. 927-928, 1904: Eng. & Mg. Jour., vol. 78, p. 27, 1904.
Offers an explanation of the formation of the spine of Mont Pelé.

17. Domes and dome structure of the high Sierra.

Geol. Soc. Am., Bull., vol. 15, pp. 29–36, 4 pls., 1904; Sierra Club Bull., vol. 5, pp. 211–220, 4 pls. 1905.
Describes dome structure and discusses its origin.

18. Variations of Sierra glaciers.

Sierra Club Bull., vol. 5, no. 1, pp. 20–25, 2 pls., 1904.

19. Systematic asymmetry of crest lines in the high Sierra of California.

Jour. Geol., vol. 12, pp. 579–588, 8 figs., 1904; Sierra Club Bull., vol. 5, pp. 279–286, 4 pls., 2 figs., 1905.
Discusses the relations of glaciers and physiographic features in the Sierra Nevada Mountains

20. The sculpture of massive rocks.

Abstract: Intern. Geog. Cong., Eighth, Rept., pp. 191-192, 1905.

21. Plans for obtaining subterranean temperatures.

Carnegie Inst. of Wash., Yearb. no. 3, 1904, pp. 120, 259–260, 1905.

22. Value and feasibility of a determination of subterranean temperature gradient by means of a deep boring.

Carnegie Inst. of Wash., Yearb. no. 3, 1904, pp. 261-267, 1905.

23. Undulations of certain layers of the Lockport limestone.

Abstract: Science, new ser., vol. 21, p. 224, 1905.

24. Terraces of the High Sierra, California.

Abstract: Science, new ser., vol. 21, p. 822, 1905.

25. Fault phenomena near Glen Echo, Md.

Abstract: Science, new ser., vol. 21, pp. 917-918, 1905.

Gilbert (Grove Karl) and **Brigham** (Albert Perry).

1. An introduction to physical geography.

New York, D. Appleton and Company, 1902. 380 pp., 263 figs..

Gill (Theodore N.).

1. Origin of fresh-water faunas.

Abstract: Intern. Geog. Cong., Eighth, Rept., p. 617, 1905.

2. An interesting Cretaceous chimæroid egg case.

Science, new ser., vol. 22, pp. 601–602, 1905.

Gillespie (P.).

1. Cement industry of Ontario.

Ont. Bur. Mines, Rept., 1905, vol. 14, pt. 1, pp. 118-183, illus., 1905.
Includes notes on the occurrence of marls and clays in Ontario.

Gillette (Halbert Powers).

1. Osmosis as a factor in ore formation.

Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 710-714, 1904.

Gillot (H.).

1. Sur la composition chimique des poussières volcaniques de la Martinique.

Soc. Geol. de Belgique, Ann., vol. 30, pp. B49-51, 1903.
Discusses the chemical composition of volcanic ash from Martinique.

Gilmore (Charles W.).

1. Discovery of teeth in Baptanodon, an Ichthyosaurian from the Jurassic of Wyoming.

Science, new ser., vol. 16, pp. 913-914, 1902.

2. Discovery of dental grooves and teeth in the type of Baptanodon (Sauranodon) Marsh.

Science, new ser., vol. 17, p. 750, 1903.

3. Osteology of Baptanodon (Marsh).

Carnegie Mus., Mem., vol. 2, pp. 77-129, 6 pls., 26 figs., 1905.

4. The mounted skeleton of Triceratops prorsus.

U. S. Nat. Mus., Proc., vol. 29, pp. 433-435, 2 pls., 1905.

Gilmore (Charles W.), **Peterson** (O. A.) and.

1. Elosaurus parvus; a new genus and species of the Sauropoda.

See **Peterson** (O. A.) and **Gilmore** (C. W.), 1.

Gilpin (Edwin, jr.).

1. The minerals of Nova Scotia.

Halifax, N. S., 1901. 78 pp.
Describes the economic mineral resources of the province.

2. The building stones of Nova Scotia.

Stone, vol. 24, pp. 122-128, 1902.

3. Sections and analyses of Nova Scotia coals.

Nova Scotian Inst. Sci., Proc. & Trans., vol. 11, pp. 8-17, 1905.

Giraud (J.).

1. Sur l'age des formations volcaniques anciennes de la Martinique.

Acad. des. Sci. [Paris], Compt. rend., vol. 135, pp. 1377-1379, 1902.
Discusses the geologic age of volcanic formations on the island of Martinique.

Giraud (J.), **Lacroix** (A.), **Rollet de l'Isle** and.

1. Sur l'eruption de la Martinique.

See **Lacroix** (A.), **Rollet de l'Isle** and **Giraud** (J.), 1.

Girty (George H.).

1. The Waverly group in northeastern Ohio.

Abstract: Science, new ser., vol. 13, p. 664, 1901.
Gives brief notes on the correlation and succession of the subdivisions.

2. The Upper Permian in western Texas.

Am. Jour. Sci., 4th ser., vol. 14, pp. 363-368, 1902.
Describes the lithologic and faunal characters of the Carboniferous section examined by Shumard in 1855, and proposes the geographic term Guadalupian for the Permian strata of the region.

3. The Carboniferous formations and faunas of Colorado.

U. S. Geol. Surv., Professional Paper no. 16, 546 pp., 10 pls., 1903.
Reviews in chronologic order the literature bearing upon the subject and includes a bibliography. Gives a résumé of the literature upon the stratigraphic geology of the Carboniferous area of Colorado. Describes the character and occurrence of the Paleozoic formations, discusses the occurrence and correlation of the Carboniferous fossil faunas by geographic areas and localities, with lists of species, and gives systematic descriptions of the *species.*

Girty (George H.)—Continued.

4. Tabulated list of invertebrate fossils from the Carboniferous section of Kansas.

U. S. Geol. Surv., Bull. no. 211, pp. 73–83, 1903.

5. New molluscan genera from the Carboniferous.

U. S. Nat. Mus., Proc., vol. 27, pp. 721-736, 3 pls., 1904.

6. Note on the Carboniferous fossils [of the Bisbee Quadrangle, Arizona].

U. S. Geol. Surv., Professional Paper no. 21, pp. 46–54, 2 pls., 1904.

Gives lists of identified fossils with notes upon their occurrence and relations. Some of the more characteristic are figured.

7. The typical species and generic characters of Aviculipecten, McCoy.

Am. Geol., vol. 33, pp. 291–296, 1 fig., 1904.

8. The type of Aviculipecten.

Am. Geol., vol. 34, pp. 332–333, 1904.

9. Triticites, a new genus of Carboniferous foraminifers.

Am. Jour. Sci., 4th ser., vol. 17, pp. 234–240, 5 figs., 1904.

10. Upper Paleozoic rocks in Ohio and northwestern Pennsylvania.

Abstract: Science, new ser., vol. 19, pp. 24–25, 1904.

Discusses the equivalency of certain Carboniferous formations.

11. The relations of some Carboniferous faunas.

Wash. Acad. Sci., Proc., vol. 7, pp. 1–26, 1905.

Discusses the relations and correlations of Carboniferous faunas and formations in the various parts of the United States to one another and to those of other parts of the world.

12. Paleontology of the Bingham mining district, Utah.

U. S. Geol. Surv., Professional Paper no. 38, pp. 387–393, 1905.

Gives notes upon the occurrence and lists of fossils identified in collections there made.

Glenn (L. C.).

1. Devonic and Carbonic formations of southwestern New York, with stratigraphic map of the Olean quadrangle.

N. Y. State Mus., Bull. 69, pp. 967–989, 2 pls., 1903.

Describes occurrence, character, and geologic relations of Devonian and Carboniferous strata of this region and discusses the geologic age of the formations.

2. Devonian and Carboniferous rocks of southwestern New York.

Abstract: Geol. Soc. Am., Bull., vol. 14, pp. 522–531, 1904.

3. Notes on a new meteorite from Hendersonville, N. C., and on additional pieces of the Smithville, Tenn., fall.

Am. Jour. Sci., 4th ser., vol. 17, pp. 215–216, 1904.

4. Notes on the wells, springs, and general water resources of Tennessee.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 358–367, 1904.

5. Notes on the wells, springs, and general water resources of Kentucky.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 369–373, 1904.

6. Systematic paleontology of the Miocene deposits of Maryland: Pelecypoda.

Md. Geol. Surv., Miocene, pp. 274–401, 44 pls., 1904.

7. The more common minerals of the region about Nashville [Tennessee].

Eng. Assoc. South, Trans., 1903, pp. 103–113 [1904].

Discusses the general principles controlling occurrence of minerals, and describes the occurrence and character of minerals from central Tennessee.

8. Fossiliferous sandstone dikes in the Eocene of Tennessee and Kentucky.

Abstract: Science, new ser., vol. 19, p. 522, 1904.

9. Gerard Troost.

Am. Geol., vol. 35, pp. 72–94, 1 pl. (por.), 1905.

Includes a discussion of Troost's reports as State geologist and a list of his published writings.

Glenn (L. C.)—Continued.

10. Underground waters of eastern United States: South Carolina.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 140-152, 1 pl., 1905.

Describes the general geology and the character, occurrence, and water-bearing resources of the various geologic formations of the State.

11. Underground waters of eastern United States: Tennessee and Kentucky.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 198-208, 1905.

Describes the underground water resources by physiographic provinces.

Goldschmidt (Victor).

1. From the borderland between crystallography and chemistry.

Wis. Univ., Bull. no. 108 (Science ser., vol. 3, no. 2), pp. 21-38, 3 figs., 1905.

Goldschmidt (Victor) and **Nicol** (William).

1. New forms of sperrylite.

Am. Jour. Sci., 4th ser., vol. 15, pp. 450-458, 5 figs., 1903.

Describes crystallographic characters.

Goldthwait (James Walter).

1. The sand plains of Glacial Lake Sudbury.

Harvard Coll., Mus. Comp. Zool., Bull., vol. 42 (Geol. Ser., vol. 6, no. 6), pp. 263-301, 5 pls., 4 figs., 1905.

Describes an investigation upon the sand plains in the Sudbury Valley, Mass., discusses their relations, and the hypotheses offered to explain their differences in level, and gives a sketch of the probable history of Lake Sudbury.

Goldthwait (James Walter), **Huntington** (Ellsworth) and.

1. The hurricane fault in southwestern Utah.

See **Huntington** (Ellsworth) and **Goldthwait** (J. W.), 1.

2. The hurricane fault in the Toquerville district, Utah.

See **Huntington** (E.) and **Goldthwait** (J. W.), 2.

Goode (John Paul).

1. The piracy of the Yellowstone.

Am. Bur. Geog., Bull., vol. 2, pp. 177-187, illus., 1901.

See no. 2047 in U. S. Geol. Surv., Bull. no. 188.

Goodwin (J. C.).

1. Reformed copper ores.

Mg. & Sci. Press, vol. 85, pp. 60, 75, 85, 1902.

Discusses the occurrence and origin of copper-ore deposits.

Gordon (C. E.).

1. Early stages of some Paleozoic corals.

Abstract: Science, new ser., vol. 21, p. 990, 1905.

Gordon (Charles H.).

1. On the origin and classification of gneisses.

Nebr. Acad. Sci., Proc., vol. 7, pp. 90-96, 1901.

2. The Port Huron oil field [Michigan].

Mich. Geol. Surv. Ann. Rept. for 1901, pp. 269-281, 1902.

Contains well records of this field and the adjoining region in Canada.

3. Wave-cutting on west shore of Lake Huron, Sanilac County, Mich.

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 283-290, 5 pls., 3 figs., 1902; Mich. Miner, vol. 4, no. 12, pp. 10-14, illus., 1902.

Describes the recent encroachment of the lake upon the land.

4. On the paramorphic alteration of pyroxene to compact hornblende.

Am. Geol., vol. 34, pp. 40-43, 1904.

5. On the pyroxenites of the Grenville series in Ottawa County, Canada.

Jour. Geol., vol. 12, pp. 316-325, 5 figs., 1904.

Describes the occurrence and characters of these rocks and discusses their origin and nomenclature.

Gordon (Charles H.)—Continued.

6. The work of rivers.

Northwest Jour. of Education, vol. 15, no. 7, pp. 3-6, 2 figs., 1904.
Discusses erosion and sedimentation by running waters.

Gordon (Reginald).

1. Bones of a mastodon found.

Science, new ser., vol. 16, p. 594, 1902.
Describes the occurrence of remains of a mastodon near Newburgh, New York.

2. Tree trunks found with mastodon remains.

Science, new ser., vol. 16, p. 1033, 1902.
Describes occurrence of remains of trunks of trees near Newburgh, New York.

Gorham (Frederic P.).

1. The Cambrian deposits of North Attleboro, Mass.

The Apteryx, vol. 1, pp. 53-58, 2 pls., 1905; Roger Williams Park Museum, Providence, R. I. Bull. no. 9, 6 pp., 2 pls., 1905.
Describes the occurrence of Cambrian strata at this locality and gives figures of fossils contained in them.

Gottschalk (A. L. M.).

1. Gold fields of eastern Nicaragua.

U. S. Dept. Comm. and Labor, Daily Consular Reports, no. 1774, pp. 2-9, 1903.
Describes the occurrence and production of gold.

Gould (Charles Newton).

1. Notes on the fossils from the Kansas-Oklahoma Red Beds.

Jour. Geol., vol. 9, pp. 337-340, 1901.
Gives a description of the character of the Red Beds and of the evidences on which they have been assigned to the Permian. Refers to fossils recently found in the beds.

2. Notes on the geology of parts of the Seminole, Creek, Cherokee, and Osage Nations.

Am. Jour. Sci., 4th ser., vol. 11, pp. 185-190, 1901.
This paper is a contribution to the Red Beds problem of the region, and indicates that the strata are of Permian and Carboniferous age.

3. Tertiary springs of western Kansas and Oklahoma.

Am. Jour. Sci., 4th ser., vol. 11, pp. 263-268, 1901.
Describes the occurrence of those springs at the contact between the Tertiary and the underlying Cretaceous or Red Bed strata.

4. Notes on the Kansas-Oklahoma-Texas Gypsum Hills.

Am. Geol., vol. 27, pp. 188-190, 1901.
Describes the geologic features of the region and discusses the age of the beds.

5. The Dakota Cretaceous of Kansas and Nebraska.

Kans. Acad. Sci., Trans., vol. 17, pp. 122-178, 9 pls., 1901.
Gives a historical sketch of work on the Dakota group, describes its geographic distribution, character, occurrence, and relations, its economic products, and the general characteristics of its fauna and flora. Includes a bibliography.

6. On the southern extension of the Marion and Wellington formations.

Kans. Acad. Sci., Trans., vol. 17, pp. 179-181, 1901.
Describes their character and occurrence in Oklahoma.

7. The Oklahoma salt plains.

Kans. Acad. Sci., Trans., vol. 17, pp. 181-184, 1901.
Describes the geologic formations of the region and the occurrence and character of the salt plains.

8. Oklahoma limestones.

Stone, vol. 23, pp. 351-354, 1901.
Contains notes on the occurrence and character of the limestones.

Gould (Charles Newton)—Continued.

9. General geology of Oklahoma.

Okla., Dept. Geol. & Nat. Hist., 2d Bien. Rept., pp. 17-74, 1902.

Describes the drainage, the occurrence, character, and relations of igneous rocks and sedimentary rocks of Carboniferous, Cretaceous, and Tertiary age, including an extended and detailed account of the Red Beds in Oklahoma, and a historical review of investigations upon their stratigraphic position and geologic age in Texas, Kansas, and Oklahoma.

10. Oklahoma gypsum.

Okla., Dept. Geol. & Nat. Hist., 2d Bien. Rept., pp. 75-137, 1902.

Describes the occurrence, character, and utilization of the gypsum deposits in Oklahoma, and discusses their geologic relations and origin.

11. Gypsum deposits in Oklahoma.

U. S. Geol. Surv., Bull. no. 223, pp. 60-67, 2 pls., 6 figs., 1904.

Describes character, occurrence, economic development, and geologic relations of gypsum deposits occurring in Permian strata.

12. Geology of Jacobs Cavern, McDonald County, Missouri.

Phillips Acad., Andover, Mass., Dept. Archaeology, Bull. 1, pp. 9-12, 1904.

13. Geology of the Wichita Mountains of Oklahoma.

Okla., Dept. Geol. & Nat. Hist., 3d Bien. Rept., pp. 15-22, 1904.

Describes the physiography of the region, and the character and occurrence of igneous rocks, and of sedimentary rocks of Cambrian, Ordovician, and Carboniferous age.

14. Geology and water resources of Oklahoma.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 148, 178 pp., 22 pls., 32 figs., 1905.

Describes the topography, the character, occurrence, and relations of Cambrian, Ordovician, Carboniferous, Cretaceous, Tertiary, and Quaternary deposits, and the water supply.

Gould (Charles Newton) and **Fisher** (Cassius A.).

1. The Dakota and Carboniferous clays of Nebraska.

Nebr. State Board of Agr., Ann. Rept. for 1900, pp. 185-194, 5 figs., 1901.

Gowling (F. A.).

1. Notes on geology of Mineral Creek district, Pinal County, Arizona.

Mg. Rep., vol. 49, pp. 501-504, 1904.

Describes the stratigraphy of the region and the occurrence of the ore deposits.

Grabau (Amadeus W.).

1. Guide to the geology and paleontology of Niagara Falls and vicinity.

Buffalo Soc. Nat. Sci., Bull., vol. 7, pp. 1-284, 18 pls., 190 figs., and geologic map; N. Y. State Mus., Bull. no. 45, pp. 1-284, 18 pls., 190 figs. and geologic map, 1901; Review, Am. Geol., vol. 28, pp. 56-57, 1901; N. Y. State Mus., 54th Ann. Rept., vol. 4, 1902.

Describes the physiography of the region, the character, occurrence, and distribution of the Silurian and Devonian strata, and the fossils of the Silurian rocks. Includes a bibliography

2. A preliminary geologic section in Alpena and Presque Isle counties, Michigan.

Am. Geol., vol. 28, pp. 177-189, 1 pl., 1901.

Gives a section of a well 1,250 feet in depth and describes the character and occurrence of the Devonian strata of the section exposed.

3. Recent contributions to the problem of Niagara.

Abstract: Science, new ser., vol. 14, p. 773, 1901; N. Y. Acad. Sci., Annals, vol. 14, p. 139, 1901; Am. Geol., vol. 28, pp. 329-330, 1901.

4. Studies of gastropoda.

Am. Nat., vol. 36, pp. 917-945, 8 figs., 1902; Columbia Univ., Geol. Dept., Contr., vol. 10, no. 89, 1902.

Describes stages of development of gastropods.

5. Stratigraphy of the Traverse group of Michigan.

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 163-210, 2 pls., 2 figs., 1902; Columbia Univ., Geol. Dept., Contr., vol. 10, no. 82, 1902.

Describes the character and occurrence of the subdivisions of this group and includes lists of fossils at various horizons and localities.

6. The Geological Society of America [Proceedings and abstracts of papers].

Science, new ser., vol. 15, pp. 81-91, 1902.

Grabau (Amadeus W.)—Continued.

7. Recent contributions to the problem of Niagara.

Abstract: N. Y. Acad. Sci., Ann., vol. 14, p. 139, 1902.

8. Notes on the development of the biserial arm in certain crinoids.

Am. Jour. Sci., 4th ser., vol. 16, pp. 289-300, 8 figs., 1903: Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 97, 1903.

9. Stratigraphy of Becraft Mountain, Columbia County, New York.

N. Y. State Mus., Bull. 69, pp. 1030-1079, 13 figs., 1903: Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 96, 1903.

Reviews literature of the region and describes character, occurrence, and fauna of the Ordovician, Silurian, and Devonian strata of Becraft Mountain.

10. Paleozoic coral reefs.

Geol. Soc. Am., Bull., vol. 14, pp. 337-352, 2 pls., 1903: Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 96, 1903.

Describes coral reefs in the Devonian of Michigan and New York, in the Silurian of Wisconsin and Gotland, and in the Devonian and Carboniferous of Belgium, names and describes varieties of reef limestone, and gives a classification of limestones.

11. Studies of Gastropoda. II. Fulgur and Sycotypus.

Am. Nat., vol. 37, pp. 515-539, 19 figs., 1903; Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 95, 1903.

Describes developmental stages, relationships, and phylogeny of Fulgur and Sycotypus.

12. Limestone regions of Michigan.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, p. 81, 1903.

13. The phylogeny of the Fusidæ.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 86-87, 1903.

14. Traverse group of Michigan.

Abstract: Geol. Soc. Am., Bull., vol. 13, p. 519, 1903.

15. On the classification of sedimentary rocks.

Am. Geol., vol. 33, pp. 228-247, 1904; Columbia Univ., Geol. Dept., Contr., vol. 12, no. 101, 1904.

Proposes a classification of sedimentary rocks and sets forth the principles upon which it is based.

16. Phylogeny of Fusus and its allies.

Smith. Misc. Coll., vol. 44, pp. 1-157, 18 pls., 22 figs., 1904.

Includes descriptions of American Tertiary forms.

17. Physical characters and history of some New York formations.

Science, new ser., vol. 22, pp. 528-535, 1905.

Discusses physiographic changes taking place in New York and other parts of the eastern half of the United States in Paleozoic time.

18. Evolution of some Devonic spirifers.

Abstract: Am. Geol., vol. 35, p. 195, 1905; Science, new ser., vol. 21, pp. 426-427, 1905.

19. Types of sedimentary overlap.

Abstract: Science, new ser., vol. 21, pp. 991-992, 1905.

Grabau (A. W.), **Johnson** (C. W.) and.

1. A new species of Clavilithes from the Eocene of Texas.

See **Johnson** (C. W.) and **Grabau** (A. W.), 1.

Grabau (Amadeus W.), **Kemp** (J. F.) and.

1. The Washington meeting of the Geological Society of America, December 30, 31, 1902, January 1 and 2, 1903.

See **Kemp** (J. F.) and **Grabau** (A. W.), 1.

Grabau (Amadeus W.), **Shimer** (Henry W.) and.

1. Hamilton group of Thedford, Ontario.

See **Shimer** (H. W.) and **Grabau** (A. W.), 1.

Granger (Walter), **Osborn** (Henry F.) and.

1. Fore and hind limbs of Sauropoda from the Bone Cabin quarry [Wyoming].

See **Osborn** (H. F.) and **Granger** (W.), 1.

Grant (C. C.). Opening address.

1. Geological Section [Hamilton Scientific Association].

   Hamilton Sci. Assoc., Jour. & Proc., no. 17, pp. 62-77, 2 figs., 1901.
   Contains notes on fossils collected near Hamilton, Ontario.

2. Niagara Falls as an index of time.

   Hamilton Sci. Assoc., Jour. & Proc., no. 17, pp. 78-83, 1 fig., 1901.

3. Geological notes, etc.

   Hamilton Sci. Assoc., Jour. & Proc., no. 17, pp. 84-96, 1 fig., 1901.
   Discusses certain post-Glacial problems.

4. Opening address, geological section [Hamilton Scientific Association], for session 1901-1902.

   Hamilton Sci. Assoc., Jour. & Proc., no. 18, pp. 33-42, 1902.
   Contains notes on fossils collected near Hamilton, Ontario.

5. Coral reefs—modern and ancient.

   Hamilton Sci. Assoc., Jour. & Proc., no. 18, pp. 43-45, 1902.
   Notes the occurrence of fossil corals in Ontario.

6. Geological notes—(continued).

   Hamilton Sci. Assoc., Jour. & Proc., no. 18, pp. 48-52, 1902.
   Contains notes on the occurrence of fossils near Hamilton, Ontario.

7. Geological notes.

   Hamilton Sci. Assoc., Jour. & Proc., no. 19, pp. 111-127, 5 figs., 1903.
   Contains notes on the occurrence of Ordovician and Silurian fossils.

8. The origin of petroleum.

   Hamilton Sci. Assoc., Jour. & Proc., no. 19, pp. 142-145, 1903.

9. Notes on past collecting season.

   Hamilton Sci. Assoc., Jour. & Proc., no. 20, pp. 29-46, 4 figs., 1904.
   Gives notes on the occurence of Silurian fossils near Hamilton, Ontario.

10. Notes on the late collecting season.

    Hamilton Sci. Assoc., Jour. & Proc., no. 21, pp. 68-74, 80-86, 2 figs., 1905.
    Contains notes on the occurrence of fossils near Hamilton, Ontario.

Grant (Ulysses Sherman).

1. Preliminary report on the copper-bearing rocks of Douglas County, Wisconsin.

   Wis. Geol. & Nat. Hist. Surv., Bull. no. 6 (2d edition), 83 pp., 13 pls., 1 fig., 1901. Abstract: Am. Geol., vol. 28, pp. 323-324, 1901.
   Contains the material of the first edition and the results of the field work of 1900 in the same region.

2. Junction of Lake Superior sandstone and Keweenawan traps in Wisconsin.

   Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 6-9, 1901.
   Reviews previous investigations and discusses the contact phenomena and the character of the sedimentary rocks.

3. Lake Superior iron ore deposits.

   Am. Geol., vol. 29, pp. 47-51, 1902.
   Reviews recent literature on these ores.

4. Geological excursion in the Pittsburg region.

   Geol. Soc. Am., Bull., vol. 14, pp. 3-4, 1903.
   Gives a short summary of the stratigraphic, economic, physiographic, and Glacial geology of this region.

5. Preliminary report on the lead and zinc deposits of southwestern Wisconsin.

   Wis. Geol. & Nat. Hist. Surv., Bull. no. 9, 103 pp., 4 pls., 8 figs., 1903.
   Describes topography and general geology of the region, and the character, occurrence, and origin of the ore deposits.

6. Investigations on the Lake Superior iron ore deposits.

   Mg. Mag., vol. 10, pp. 175-183, 6 figs., 1904.
   Describes the general geology of the region, and the occurrence, geologic relations, character, and origin of the iron ore deposits.

Grant (Ulysses Sherman)—Continued.

7. A pre-Glacial peneplain in the driftless area.

   Abstract: Science, new ser., vol. 19, p. 528, 1904; Sci. Am. Suppl., vol. 57, p. 23446, 1904.

8. Field work in the Wisconsin lead and zinc district.

   Abstract: Geol. Soc. Am., Bull., vol. 15, pp. 552–553, 1904; Science, new ser., vol. 19, p. 526, 1904; Sci. Am. Suppl., vol. 57, p. 23446, 1904; Eng. & Mg. Jour., vol. 77, p. 74, 1904.

   Describes briefly the method adopted in a combined topographic, geographic, and geologic survey in this region.

9. Structural relations of the Wisconsin zinc and lead deposits.

   Econ. Geol., vol. 1, pp. 233–242, 4 figs., 1905.

   Describes the general and structural geology of the ore deposits, and discusses their origin.

10. Zinc and lead ores of southwestern Wisconsin.

    U. S. Geol. Surv., Bull. no. 260, pp. 304–310, 1905.

    Describes the general geology, and the character and occurrence of zinc and lead deposits.

11. Water resources of the Mineral Point quadrangle, Wisconsin.

    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 67–73, 1905.

Gratacap (L. P.).

1. Paleontological speculations.

   Am. Geol., vol. 27, pp. 75–100, 1901.

   Discusses the life history and development of various fossil forms.

2. Paleontological speculations. II.

   Am. Geol., vol. 28, pp. 214–234, 1901.

   Discusses biological crises.

3. The Ward-Coonley collection of meteorites.

   Sci. Am. Suppl., vol. 52, pp. 21382–21383, 1901.

   Contains notes on the characters of meteorites.

4. Paleontological speculations. III.

   Am. Geol., vol. 29, pp. 290–301, 1902.

5. The great Jurassic dinosaur.

   Sci. Am., vol. 86, p. 5, 3 figs., 1902.

   Describes the vertebrate animal life of the Jurassic and the occurrence of remains in Wyoming.

6. Vade mecum guide. A popular guide to mineral collections. With a chapter on the development of mineralogy.

   New York, The Broadway Press, no date. 178 pp., illus.

7. Geology of the City of New York (Greater New York), with geological map. Second edition. For use in schools, institutes, and classes.

   New York, Brentano's, 1904. 119 pp., 35 figs., and geol. map.

Graton (Louis Caryl).

1. On the petrographical relations of the Laurentian limestones and the granite in the township of Glamorgan, Haliburton County, Ontario.

   Can. Rec. Sci., vol. 9, pp. 1–38, 1903.

2. Up and down the Mississaga [Ontario].

   Ont. Bur. Mines [12th] Rept., pp. 157–172, 3 pls., 1903.

   Contains observations on the geography, typography, geology, petrography, and resources.

3. The Carolina tin belt.

   U. S. Geol. Surv., Bull. no. 260, pp. 188–195, 1 fig., 1905.

   Describes the location and general geology of the region in which tin ores have been discovered, their character and occurrence, and the mining developments.

4. Consanguinity of the eruptive rocks of Cripple Creek.

   Abstract: Science, new ser., vol. 21, p. 391, 1905.

Graton (L. C.) and **Schaller**) W. T.).

1. Purpurite, a new mineral.

   Am. Jour. Sci., 4th ser., vol. 20, pp. 146–151, 1905. Zeitschr. f. Krystall. u. Min., Bd. 41, pp. 433–438, 1905 [German translation].

   Describes occurrence, physical properties, and chemical composition.

Graton (L. C.), **Hess** (F. L.) and.

1. The occurrence and distribution of tin.

See **Hess** (F. L.) and **Graton** (L. C.), 1.

Grave (Caswell).

1. The oyster reefs of North Carolina; a geological and economic study.

Johns Hopkins Univ., Circ. no. 151, pp. 50–53, 2 figs., 1901.

Green (Raoul).

1. The Frank disaster [Alberta].

Can. Mg. Rev., vol. 22, pp. 103–110, illus., 1903.
Describes the landslide at Frank, Alberta, and discusses its cause.

Greene (George K.).

1. Contribution to Indiana paleontology. Part VI.

New Albany, Ind., pp. 42–49; 3 pls., 1901.
Describes Devonian fossils from Indiana.

2. Contribution to Indiana paleontology. Part VII.

New Albany, Ind., pp. 50–61, 3 pls. 1901.
Describes Devonian and Carboniferous fossils from Indiana.

3. Contribution to Indiana paleontology. Part VIII.

New Albany, Ind., pp. 62–74, 3 pls., 1901.
Describes fossils from upper Paleozoic rocks.

4. Contribution to Indiana paleontology. Part IX.

New Albany, Ind., pp. 75–84, 3 pls., 1902.
Describes new species of Devonian corals and [R. R.] Rowley describes new species of Devonian echinodermata.

5. Contribution to Indiana paleontology. Part X.

New Albany, Ind., pp. 85–97, 3 pls., 1902.
Contains descriptions of new corals from the Devonian by Greene and of new species of echinoderms from the Carboniferous and Devonian by Rowley.

6. Contribution to Indiana paleontology. Part XI.

New Albany, Ind., pp. 98–109, 3 pls., 1903.
Includes descriptions of Silurian and Devonian corals and echinoderms. the latter described by Rowley.

7. Contribution to Indiana paleontology. Part XII.

New Albany, Ind., pp. 110–129, 3 pls., 1903.
Contains descriptions of Devonian corals and Devonian and Carboniferous echinoderms, the latter by Rowley.

8. Contribution to Indiana paleontology. Part XIII.

New Albany, Ind., pp. 130–136, 3 pls., 1903.
Contains descriptions of Devonian corals and echinoderms, the latter by Rowley.

9. Contribution to Indiana paleontology. Part XIV.

New Albany, Ind., pp. 138–145, 3 pls., 1903.
Contains descriptions of Devonian corals by Greene and Devonian echinodermata by Rowley.

10. Contribution to Indiana paleontology. Part XV.

New Albany, Ind., pp. 146–155, 3 pls., 1903.
Contains descriptions of Devonian corals by Greene and of Devonian echinodermata by Rowley.

11. Contribution to Indiana paleontology. Part XVI.

New Albany, Ind., pp. 156–167, 3 pls., 1903.
Contains descriptions of Devonian corals by Greene and of Devonian and Carboniferous echinodermata by Rowley.

12. Contribution to Indiana paleontology. Part XVII.

New Albany, Ind., pp. 168–175, 3 pls., 1904.
Contains descriptions of Devonian and Carboniferous corals by George K. Greene, and of Carboniferous echinoderms by R. R. Rowley.

Greene (George K.)—Continued.

13. Contribution to Indiana paleontology. Part XVIII.

New Albany, Ind., pp. 176-184, 3 pls., 1904.
Contains descriptions of Devonian and Carboniferous corals by George K. Greene, and of Devonian and Carboniferous echinoderms by R. R. Rowley.

14. Contribution to Indiana paleontology. Part XIX.

New Albany, Ind., pp. 185-197, 3 pls., 1904.
Contains descriptions of Devonian, Silurian, and Carboniferous corals by G. K. Greene, and of Carboniferous and Devonian echinoderms by R. R. Rowley. The latter contributes a review of Dr. G. Hambach's Revision of the Blastoideæ.

15. Contribution to Indiana paleontology. Part XX.

New Albany, Ind., pp. 198-204, 3 pls., 1904.
Contains specific descriptions of Devonian corals by George K. Greene.
Parts I-XX, February, 1898, to September, 1904, form volume 1 of the "Contribution to Indiana paleontology."

Greger (D. K.).

1. The distribution and synonymy of Ptychospira sexplicata (White and Whitfield).

Am. Geol., vol. 33, pp. 15-17, 1904.

2. On the genus Rhynchopora, King, with notice of a new species.

Am. Geol., vol. 33, pp. 297-301, 12 figs., 1904.

Gregory (Herbert E.).

1. Andesites of the Aroostook volcanic area of Maine.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 467-480, 1901. (From Am. Jour. Sci., 4th ser., vol. 8, pp. 359-369.)

2. Notes on the wells, springs, and general water resources of Connecticut.

U. S. Geol. Surv., Water-Supply and Irrig. Paper no. 102, pp. 127-168, 1904.

3. Underground waters of eastern United States: Connecticut.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 76-81, 1 fig., 1905.
Describes the general geology and the underground water supply of the State.

Gregory (J. W.).

1. The plan of the earth and its causes.

Am. Geol., vol. 27, pp. 100-119, 5 figs. and 134-147, 3 pls., 16 figs., 1901.
Reviews previous discussions as to the origin of the distribution of the irregularities in the surface of the lithosphere and discusses the pentagonal theory of Élie de Beaumont and the tetrahedral of Green.

Gregory (W. K.).

1. The weight of the Brontosaurus.

Science, new ser., vol. 22, p. 572, 1905.

Gregory (W. M.).

1. Preliminary report on Arenac County and parts of Ogemaw, Iosco and Alcona counties [Michigan].

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 11-29, 1902.
Describes the occurrence of limestone, gypsum, coal, water supply and clays in these counties.

2. Geological Survey of Michigan: Preliminary report on Arenac, Ogemaw, Iosco and Alcona counties.

Mich. Miner, vol. 4, no. 3, pp. 11-15, 1902.
Discusses the economic geology of this area.

3. The alabaster area [Michigan].

Mich. Geol. Surv., vol. 9, pt. 2, pp. 60-77, 1904.
Describes the glacial geology, the physiographic features, and the Paleozoic geological formations exposed in this area.

4. Recent shore forms.

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 301-305, 1905.
Describes changes in the shore line of Lake Huron.

Gresley (W. S.).

1. Possible new coal plants, etc., in coal.

   Am. Geol., vol. 27, pp. 6-14, 6 pls., 1901.
   Describes structures occurring in coal beds which may be of vegetable origin.

Grider (R. L.), **Bailey** (E. W.), **Rath** (C. M.).

1. A garnetiferous bed in Golden Gate Canyon, Jefferson County, Colorado.

   See **Bailey** (E. W.), **Rath** (C. M.), **Grider** (R. L.), 1.

Griffith (William).

1. An investigation of the buried valley of Wyoming [Pennsylvania].

   Wyoming Hist. and Geol. Soc., Proc. and Coll., vol. 6, pp. 27-36, with map, 1901. Abstract: Am. Geol., vol. 28, p, 324, 1901.
   Describes glacial phenomena of the region.

2. The anthracite of the Third Hill Mountain, West Virginia.

   Franklin Inst., Jour., vol. 154, pp. 431-439, 1 fig., 1902.
   Contains notes on the general geology of the region and the recurrence and character of coal.

3. The anthracite of the Third Hill Mountain, West Virginia; the effect of crushing movements on the quality of the coal.

   Mines & Minerals, vol. 23, pp. 293-294, 1 fig., 1903.
   Describes the general geology of the region.

4. A Missouri coal field.

   Eng. & Mg. Jour., vol. 77, pp. 564-565, 5 figs., 1904.
   Describes the occurrence and character of coal in Morgan County, Missouri.

Griffiths (A. B.).

1. The volcanic dust of Mont Pelée.

   Chemical News, vol. 88, p. 231, 1903.

Griggs (Robert F.).

1. The thickness of the Columbus limestone.

   Ohio Nat., vol. 4, pp. 67-68, 1904.

Grimsley (G. P.).

1. Kansas mines and minerals.

   Kans. Acad. Sci., Trans., vol. 17, pp. 200-207, 1901.
   Gives an account of the occurrence of the various economic products of the State.

2. Economic geology of Iola [Kansas] and vicinity.

   Kans. Acad. Sci., Trans., vol. 18, pp. 78-82, 1 pl., 1903.
   Describes production of natural gas and the mineral industries of this locality.

3. Oil, gas, and glass, chemical industries, and minerals in Kansas.

   Kans., Bur. Labor and Industry, 1st Bien. Rept., pp. 323-350, 2 pls. and 1 map, 1903.
   Discusses the origin of oil and gas, the geological conditions of accumulation, duration of supply, and their occurrence in Kansas.

4. Gypsum deposits in Michigan.

   U. S. Geol. Surv., Bull. no. 223, pp. 45-47, 1904.
   Describes occurrence, character, economic development, and geologic relations of the gypsum deposits.

5. Gypsum deposits in Kansas.

   U. S. Geol. Surv., Bull. no. 223, pp. 53-59, 1 pl., 3 figs., 1904.
   Describes character, occurrence, economic development, and geologic relations of the gypsum deposits in Kansas.

6. A theory of origin for the Michigan gypsum deposits.

   Am. Geol., vol. 34, pp. 378-387, 1904.
   Describes the general geology of lower Michigan and the geological history of the Michigan basin, and discusses the conditions under which the gypsum deposits of this area were produced.

Grimsley (G. P.)—Continued.

7. The gypsum of Michigan and the plaster industry.

Mich. Geol. Surv., vol. 9, pt. 2, 246 pp., 29 pls., 49 figs., 1904.

Gives an account of the occurrence and utilization of gypsum deposits in other countries and States, describes the geology and topography of the Michigan series gypsum, and the mining of the gypsum deposits and manufacture into plaster, and discusses the origin of gypsum and its various uses.

8. Origin of gypsum, with special reference to the origin of the Michigan deposits.

Kans. Acad. Sci., Trans., vol. 19, pp. 110–117, 1 pl., 1905.

Griswold (W. T.).

1. The Berea Grit oil sand in the Cadiz quadrangle, Ohio.

U. S. Geol. Surv., Bull. no. 198, 43 pp., 1 pl., 1 fig., 1902.

Describes the occurrence of petroleum and the method used in constructing a contour map of the Berea grit oil sand in this area.

2. Structural work during 1901 and 1902 in the eastern Ohio oil fields.

U. S. Geol. Surv., Bull. no. 213, pp. 336–344, 1903.

Describes factors controlling accumulation of oil, the method used in constructing a map of the oil sand, the structure of the Berea grit, and the development of the field.

3. Pittsburg coal in the Burgettstown quadrangle, Pennsylvania.

U. S. Geol. Surv., Bull. no. 260, pp. 402–410, 1 pl., 1905.

Describes the methods of work, the general geology, and the occurrence and mining of the Pittsburg coal in this quadrangle.

Guild (F. N.).

1. Petrography of the Tucson Mountains, Pima Co., Arizona.

Am. Jour. Sci., 4th ser., vol. 20, pp. 313–318, 1 pl., 1905.

2. El Instituto Geologica de México.

Am. Geol., vol. 36, pp. 293–296, 1 pl., 1905.

A brief account of the Geological Survey of Mexico, giving history, organization, etc., and a list of its publications.

Gulick (Addison).

1. The fossil land shells of Bermuda.

Phila. Acad. Nat. Sci., Proc., vol. 56, pp. 406–421, 1 pl. and 3 figs. (maps), 1904.

Describes the occurrence and gives systematic descriptions of fossil land shells of Bermuda.

Gulliver (F. P.).

1. Joint meetings of the Geological Society of America, Section E, and the National Geographic Society.

Science, new ser., vol. 16, pp. 258–268, 1902.

Gives titles and abstracts of papers read at the meeting at Pittsburg, Pa., July 1 to 3, 1902.

2. Cuttyhunk Island.

Abstract: Geol Soc. Am., Bull., vol. 13, p. 538, 1903.

3. Nantucket shorelines. I.

Abstract: Geol. Soc. Am., Bull., vol. 14, pp. 555–556, 1904.

Outlines a proposed investigation to determine changes in shore lines.

4. Nantucket shorelines. II.

Geol. Soc. Am., Bull. vol. 15, pp. 507–522, 4 pls., 4 figs., 1904.

Describes recent changes in the shore lines of Nantucket Island.

5. Island tying.

Intern. Geog. Cong., Eighth, Rept., pp. 146–149, 1 fig., 1905.

Describes the method by which islands are connected with one another and the mainland by the deposition of sediment.

6. Sudbury basin shore lines [Massachusetts].

Abstract: Science, new ser., vol. 22, pp. 334–335, 1905.

Gunther (Charles Godfrey).

1. The gold deposits of Plomo, San Luis Park, Colorado.

   Econ. Geol., vol. 1, pp. 143-154, 7 figs., 1905.

   Describes the general geology, the lithologic characters of the rocks, and the character, occurrence, and relations of the ore bodies.

2. An interesting fault-system [California].

   Eng. and Mg. Jour., vol. 80, p. 1013, 1 fig., 1905.

Guppy (R. J. Lechmere).

1. On the occurrence of gold and coal in Trinidad. With a brief sketch of the geological history of the island.

   Trinidad, Victoria Institute, Industrial Trinidad, pp. 520-531, 1903.

2. On some samples of rock from borings at Sangregrande, Trinidad. Part I.

   Trinidad, Victoria Inst., Proc., vol. 2, pp. 1-5, 1 pl., 1904.

   Describes the material obtained from borings and gives a list of and notes upon the fossils identified therein.

3. The Sangregrande borings. Part II.

   Trinidad, Victoria Inst., Proc., vol. 2, pp. 5-7, 1904.

4. Observations on some of the Foraminifera of the oceanic rocks of Trinidad.

   Trinidad, Victoria Inst., Proc., vol. 2, pp. 7-16, 2 pls., 1904.

5. Preliminary geological notes on the Marbela Manjak mine [Trinidad].

   Trinidad, Victoria Inst., Proc., vol. 2, pp. 16-17, 1904.

6. Note on the Komuto shell-bed.

   Trinidad, Victoria Inst., Proc., vol. 2, p. 17, 1904.

7. Tobagan fossils. On some specimens of fossils from Tobago in the Victoria Museum, Trinidad.

   Trinidad, Botan. Dept, Bull. no. 514, 1904, 2 pp.

   Gives notes on the occurrence of some molluscan shells.

8. The growth of Trinidad.

   Can. Inst., Trans., vol. 8, pp. 137-149, 9 figs., 1905.

   Describes the process of formation of the island of Trinidad.

Gwillim (J. C.).

1. Report on the Atlin mining district, British Columbia.

   Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 1B-48B, 5 pls., map, 1902.

   Discusses physiographic features, geologic structure and petrology of this area, and character and distribution of the gold-bearing gravels.

2. Characteristics of the Atlin gold field [British Columbia].

   Can. Mg. Review, vol. 21, pp. 13-16, 1902.

   Describes the general topography and geology of the region and the occurrence of placer gold.

3. Glaciation in the Atlin district, British Columbia.

   Jour. Geol., vol. 10, pp. 182-185, 1902.

   Describes the valleys and local glaciers of the region.

4. Notes on some western coals.

   Can. Mg. Inst., Jour., vol. 7, pp. 422-424, 1904.

   Gives observations upon the occurrence and character of coals in Alberta and British Columbia, and their geologic horizons.

5. Notes on the life history of coal seams.

   Can. Mg. Inst., Jour., vol. 8, pp. 235-243, 1905.

   Discusses origin of coal and the composition of some Canadian coals.

H.

Haanel (Eugene).

1. Discussion of Mr. W. M. Brewer's paper on "The rock-slide at Frank, Alberta Territory, Canada."

   Inst. Mg. Engrs., Trans., vol. 26, pp. 157-163, 1904.

Haas (Hippolyt).

1. Der Vulkan. Die Natur und das Wesen der Feuerberge im Lichte der neueren Anschauungen für die Gebildeten aller Stände in gemeinfasslicher Weise dargestellt.

   Berlin, Alfred Schall [1904]. 340 pp., 32 pls.

   A general discussion of volcanic activity, its causes, nature, etc. One chapter is devoted to volcanic eruptions in the Lesser Antilles in 1902.

2. Zur Geologie von Canada.

   Petermanns Mitteilungen, Bd. 50, pp. 20-28, 47-55, 1904.

Haehl (H. L.) and **Arnold** (Ralph).

1. The Miocene diabase of the Santa Cruz Mountains in San Mateo County, California.

   Am. Phil. Soc., Proc., vol. 43, pp. 16-58, 27 figs., 1904.

   Describes character and occurrence of Tertiary formations and included igneous rocks, and the petrographic characters of the latter. Includes lists of fossils contained in the Tertiary formations.

Hager (Lee).

1. The mounds of the southern oil fields.

   Eng. & Mg. Jour., vol. 78, pp. 137-139, 180-182, 4 figs., 1904.

   Describes the general geology of the Gulf coastal region of Louisiana and Texas, and the geologic structure of the mounds and salines, discusses the theories of their origin, and presents a new hypothesis.

Hague (Arnold).

1. Note sur les phénomènes volcaniques Tertiaires de la chaîne d'Absaroka [Wyoming].

   Intern. Cong. Geol., Compte Rendu, viii session, pp. 364-365, 1901.

Halberstadt (Baird).

1. Obituary notice of J. Peter Lesley.

   Mines & Minerals, vol. 23, p. 556, por., 1903.

Hale (David J.).

1. Marl (bog lime) and its application to the manufacture of Portland cement.

   Mich. Geol. Surv., vol. 8, pt. 3, pp. 1-399, 23 pls., 44 figs., 1903.

   Describes occurrence and character of marl (bog lime) and discusses the theories of its origin.

Hall (Benjamin M.).

1. Water powers of Alabama, with an appendix on stream measurements in Mississippi.

   U. S. Geol Surv., Water-Supply and Irrigation Paper no. 107, 253 pp., 9 pls., 9 figs, 1904.

   Includes a brief account of the topographic and geologic features of the State.

Hall (Charles E.).

1. Notes on a geological section from Iguala to San Miguel Totolapa, State of Guerrero, Mexico.

   Soc. Cient. Ant. Alzate, Mem. y Rev., t. 13, pp. 327-335, 2 pls. (sections), 1903.

   Describes character and occurrence of Tertiary and Cretaceous strata and of igneous rocks and gives several sections showing the geologic relations of these formations.

Hall (Charles M.) and **Willard** (Daniel E.).

1. Casselton-Fargo folio, North Dakota-Minnesota.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 117, 1905.

   Describes the topography, drainage, and general geology, the geologic history, including a brief account of Lake Agassiz, the character and occurrence of Quaternary deposits, discusses the underground water resources, and gives a large number of well records.

Hall (Charles M.), **Todd** (J. E.) and.

1. Alexandria folio, South Dakota.

   See **Todd** (J. E.) and **Hall** (C. M.), 1.

Hall (Charles M.), **Todd** (J. E.) and—Continued.

2. Geology and water resources of part of the lower James River Valley, South Dakota.

   See **Todd** (James E.) and **Hall** (C. M.), 2.

3. De Smet folio, South Dakota.

   See **Todd** (James E.) and **Hall** (C. M.), 3.

Hall (Christopher Webber).

1. Exploration for gold in the central States.

   Lake Superior Mg. Inst., Proc., pp. 49–60 [1898?].
   Discusses occurrences of gold.

2. Sources of the constituents of Minnesota soils.

   Minn. Acad. Nat. Sci., Bull. no. 3, pp. 388–406, 2 figs., 1901.

3. Keweenawan area of eastern Minnesota.

   Geol. Soc. Am., Bull., vol. 12, pp. 313–342, 2 pls., 3 figs, 1901.
   Describes the topography and physiography, relations, associated formations, the occurrence of the Keweenawan rocks, and the general characters and petrography of the Chengwatana series.

4. Keewatin area of eastern and central Minnesota.

   Geol. Soc. Am., Bull., vol. 12, pp. 343-376, 4 pls., 1901.
   Describes the occurrence of the series at various localities and their megascopic and microscopic characters. Discusses the evidences as to the age of the series.

5. The geology of Minnesota.

   Int. Mg. Cong., 4th session, Proc., pp. 165–171, 1901.
   Describes the geologic formations of the State and the occurrence of economic minerals in each of them.

6. The geography and geology of Minnesota.

   Minneapolis, The H. W. Wilson Company, 1903. xii, 299 pp., 5 pls., 163 figs.

7. The geology of Minnesota. A description of the various formations in the State, and an account of their products which are of economic value.

   Mines and Minerals, vol. 23, pp. 532–534, 1903.
   Describes the distribution, lithology, and economic products of the several geologic systems present in the State.

8. Notes on the wells, springs, and general water resources of Minnesota.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 441–488, 1904.

9. Underground waters of eastern United States: Minnesota.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 226–232, 1905.
   Describes the occurrence, character, and water resources of water-bearding strata underlying the State.

10. The structure, lithology, and genesis of the magnesian series of the northwestern States. [Abstract.]

    Minn. Acad. Nat. Sci., Bull., vol. 4, no. 1, pt. 2, pp. 119–123, 1905.
    Discusses the nomenclature of the Magnesian series in Minnesota and Wisconsin.

Hallock (William).

1. Peculiar effects due to a lightning discharge on Lake Champlain in August, 1900.

   Jour. Geol., vol. 9, pp. 671–672, 1901.
   Describes the effect upon the rocks struck by the discharge.

2. An ascent of Mt. Whitney, California, with notes on the geology.

   Abstract: Science, new ser., vol. 17, p. 505, 1903.

Halse (Edward).

1. Some silver-bearing veins of Mexico.

   North of Eng. Inst. of Mg. & Mech. Engrs., Trans., vol. 50, pp. 202–217, 1901.
   Contains brief notes on the vein systems of various mines.

2. Notes on the structure of ore-bearing veins in Mexico.

   Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 285–302, 26 figs., 1902.

Halse (Edward)—Continued.

3. Gems and precious stones of Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 568–569, 1902.
Contains notes on the occurrence of precious stones in Mexico.

4. Some silver-bearing veins of Mexico.

Inst. Mg. Engrs., Trans., vol. 18, pp. 370–384, 1900; vol. 21, pp. 198–213, 2 pls., 1901; vol. 23, pp. 243-257, 2 pls., 1902; vol. 24, pp. 41–60, 1903; vol. 27, pp. 169–189, 1904.
Contains observations upon the geology and occurrence of silver ores.

5. The occurrence of pebbles, concretions, and conglomerates in metalliferous veins.

Am. Inst. Mg. Engrs., Bi-mo. Bull. no. 4, pp. 719–742, 13 figs., 1905.

Hambach (Gustav).

1. Revision of the Blastoideæ, with a proposed new classification, and description of new species.

St. Louis Acad. Sci., Trans., vol. 13, pp. 1–67, 5 pls., 15 figs., 1903.

Hamilton (S. Harbert).

1. Troost's survey of Philadelphia.

Am. Geol., vol. 27, pp. 41–42, 1901.
Calls attention to the location of a copy of Dr. Gerard Troost's publication on the survey of the environs of Philadelphia.

2. [Notes on the geology and physiography of Cuba.]

Phila. Acad. Nat. Sci., Proc., vol. 54, pp. 744-749, 1902.

Hamilton (S. Harbert) and **Withrow** (James R.).

1. The progress of mineralogy in 1899, an analytical catalogue of the contributions to that science published during the year.

Am. Inst. Mg. Engrs., Bull. no. 2, 96 pp., 1900. Abstract: Am. Geol., vol. 27, p. 48, 1901.

Hamilton (W. R.), **Kessler** (H. H.) and.

1. The orbicular gabbro of Dehesa, California.

See **Kessler** (H. H.) and **Hamilton** (W. R.), 1.

Hanbury (David T.).

1. Through the barren ground of northeastern Canada to the Arctic coast.

Geog. Jour., vol. 32, pp. 178–191, illus., 1903.
Contains a brief account of the geology of the region traversed.

Hanks (Henry G.).

1. The deep-lying auriferous gravels and table mountains of California.

San Francisco, 1901. 15 pp., 6 pls.

Hardman (John E.).

1. A new mineral area in Ontario.

Can. Mg. Rev., vol. 24, pp. 95–98, 157–158, 10 figs., 1905.
Gives notes on the geology of western Ontario and the occurrence of mineral deposits.

Harper (Henry Winston).

1. A contribution to the chemistry of some of the asphalt rocks found in Texas.

Texas Univ. Mineral Surv., Bull. no. 3, pp. 08–129, 2 pls., 1902.
Discusses the nomenclature of asphalt and presents the results of analyses of many samples.

Harper (Roland M.).

1. Taxodium distichum and related species, with notes on some geological factors influencing their distribution.

Torrey Bot. Club, Bull., vol. 29, pp. 381-399, 1902.
Discusses the influence of certain geologic formations upon the geographic distribution of these plants.

2. Notes on the Lafayette and Columbia formations and some of their botanical features.

Science, new ser., vol. 16, pp. 68–70, 1902.
Discusses the use of plants growing in soils derived from these formations in identifying the presence of the latter where surface outcrops are not available.

Harrington (Bernard J.).

1. George Mercer Dawson.

   Am. Geol., vol. 28, pp, 67-76, 1 pl. (por.), 1901. Can. Rec. Sci., vol. 8, pp. 413-425, 1 pl. (por.), 1902. Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 183-192, 1902.
   Describes the life and work of Dr. Dawson.

2. On the composition of some Canadian amphiboles.

   Am. Jour. Sci., 4th ser., vol. 15, pp. 392-394, 1903.

3. On the formula of bornite.

   Am. Jour. Sci., 4th ser., vol. 16, pp. 151-154, 1903.

4. On an interesting variety of fetid calcite and the cause of its odor.

   Am. Jour. Sci., 4th ser., vol. 19, pp. 345-348, 1905.

5. On the composition of some Montreal minerals.

   Can. Roy. Soc., Trans., 2d ser., vol. 11, sect. 3, pp. 25-28, 1905.
   Describes the composition of nepheline, acmite, lepidomelane, natrolite, and analcite.

Harrington (Daniel).

1. Coal mining at Sunnyside, Utah.

   Colo. Sch. Mines, Bull., vol. 1, pp. 227-235, 1901.
   Describes the general geology, the occurrence of the coal in the Laramie group, and the mining operations.

Harris (Gilbert Dennison).

1. Oil in Texas.

   Science, new ser., vol. 13, pp. 666-667, 1901.
   Contains notes on the thickness of the Tertiary in the vicinity of Beaumont.

2. The geology of the Mississippi embayment, with special reference to the State of Louisiana.

   La. Geol. Surv., pt. 6, pp. 5-89, 10 pls., 7 figs., 1902.
   Describes the orographic movements at the close of the Cretaceous, and the character and distribution of the Eocene, Oligocene, Miocene, and Quaternary series in the region.

3. Subterranean waters of Louisiana.

   La. Geol. Surv., pt. 6, pp. 203-252, 2 pls., 5 figs., 1902.
   Describes the character and occurrence of the Cretaceous and Tertiary beds, and gives sections of many well borings and analyses of the waters.

4. Oil in Louisiana.

   La. Geol. Surv., pt. 6, pp. 265-275, 1 pl., 27 figs., 1902.
   Gives sections and data regarding the horizons of the oil-bearing sands.

5. Eocene outcrops in central Georgia.

   Am. Pal., Bull. no. 16, pp. 1-7, 1902.
   Describes occurrence of Eocene formations in Georgia.

6. Underground waters of southern Louisiana.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 101, 98 pp., 11 pls., 15 figs., 1904.
   Includes an account of the topography and stratigraphy of southern Louisiana.

7. The Helderberg invasion of the Manlius.

   Am. Pal., Bull., no. 19 (vol. 4), pp. 53-77, 9 pls., 1904.
   Describes sections of Devonian rocks at a number of localities in New York, and discusses their correlation and the occurrence and faunal relations of the fossils.

8. Underground waters of southern Louisiana.

   La. State Exp. Station, Geol. Surv. Bull. no. 1, pp. 2-77, 7 pls., 12 figs., 1905.
   Discusses the stratigraphy of southern Louisiana, with especial reference to the underground waters, and discusses the occurrence, character, depth, etc., of many wells.

9. The establishment of tidal gage work in Louisiana.

   La. Geol. Surv., Bull. no. 3, 28 pp., 8 pls., 5 figs., 1905.

Hartnagel (C. A.).

1. Preliminary observations on the Cobleskill ("Coralline") limestone of New York.

N. Y. State Mus., Bull. 69, pp. 1109-1175, 2 pls., 5 figs., 1903.

Discusses the geologic position, geographic extent, and outcrops of the "Coralline" limestone, the distribution and stratigraphic relations of its fauna, giving lists of species by localities its relations to other Silurian formations, its correlation and nomenclature, and the geographic conditions prevailing in Silurian times.

2. Notes on the Siluric or Ontaric section of eastern New York.

N. Y. State Mus., Bull. 80, pp. 342-358, 1905.

Describes the occurrence, development, character, and relations of Silurian formations in the Helderberg region of New York.

3. Structural relations and origin of the limonite beds at Cornwall, N. Y.

Abstract: Science, new ser., vol. 21, p. 991, 1905.

Hartzell (Joseph Culver).

1. Das Oberdevon Europas und Nordamerikas.

Inaugural Dissertation, Ludwig Maximilians-Universität zu München. München, Kastner & Callwey, 73 pp., 1904.

Discusses the occurrence and correlation of Devonian strata in Europe, North America, and other parts of the world.

Harwood (F. H.).

1. The fluorspar and zinc mines of Kentucky.

Mg. & Sci. Press, vol. 86, pp. 87-88, 101-102, 1903.

Describes the occurrence, character, and mining of the fluorspar and zinc deposits in western Kentucky and southern Illinois.

Haseltine (Robert M.).

1. Lignite deposits or fields of brown coal in North Dakota.

Mines and Minerals, vol. 21, pp. 545-546, 1901.

Describes character and occurrence of the lignite beds.

2. The bituminous coal field of Ohio.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 215-226, 1 pl., 1902.

Describes extent of field, character, composition, occurrence, and production of coals

Haseltine (Robert M.), **White** (David), **Campbell** (Marius R.), and.

1. The northern Appalachian coal field.

See **White** (David), **Campbell** (M. R.), and **Haseltine** (R. M.), 1.

Hasse (Adelaide R.).

1. Reports of explorations printed in the documents of the United States government. (A contribution toward a bibliography.)

Office Superintendent of Documents, Government Printing Office, Washington, 1899, 90 pp.

Contains titles of papers bearing on geology.

Hatcher (John B.).

1. Diplodocus Marsh, its osteology, taxonomy, and probable habits, with a restoration of the skeleton.

Carnegie Mus., Mem., vol. 1, no. 1, pp. 1-63, 13 pls., 21 figs., 1901. Abstract: Science, new ser., vol. 14, pp. 531-532, 1901.

2. On the structure of the manus in Brontosaurus.

Science, new ser., vol. 14, pp. 1015-1017, 1901.

3. On some new and little known fossil vertebrates.

Carnegie Mus., Annals, vol. 1, no. 1, pp. 128-144, 4 pls., 1901.

4. On the cranial elements and the deciduous and permanent dentitions of Titanotherium.

Carnegie Mus., Annals, vol. 1, no. 2, pp. 256-262, 2 pls., 1 fig., 1901.

5. Sabal rigida; a new species of palm from the Laramie.

Carnegie Mus., Annals, vol. 1, no. 2, pp. 263-264, 1 fig., 1901.

Hatcher (John B.)—Continued.

6. The Jurassic Dinosaur deposits near Canyon City, Colorado.

   Carnegie Mus., Annals, vol. 1, no. 2, pp. 327-341, 1901.

   Describes the mode of occurrence of the saurian remains near Canyon City and the geology of the strata in which found.

7. A mounted skeleton of Titanotherium dispar Marsh.

   Carnegie Mus., Annals, vol. 1, no. 3, pp. 347-355, 3 pls., 1902.

8. Structure of the fore limb and manus of Brontosaurus.

   Carnegie Mus., Annals, vol. 1, no. 3, pp. 356-376, 2 pls., 14 figs., 1902.

9. The genera and species of the Trachodontidæ (Hadrosauridæ, Claosauridæ) Marsh.

   Carnegie Mus., Annals, vol. 1, no. 3, pp. 377-386, 1902.

10. Oligocene Canidae.

    Carnegie Mus., Mem., vol. 1, no. 2, pp. 65-108, 20 pls., 7 figs., 1902.

11. Origin of the Oligocene and Miocene deposits of the Great Plains.

    Am. Phil. Soc., Proc., vol. 41, pp. 113-131, 1902.

    Discusses the character, distribution, origin, and correlation of these strata.

12. Discovery of a musk ox skull (Ovibos cavifrons Leidy), in West Virginia, near Steubenville, Ohio.

    Science, new ser., vol. 16, pp. 707-709, 1902.

13. A correction of Professor Osborn's note entitled "New vertebrates of the Mid-Cretaceous."

    Science, new ser., vol. 16, pp. 831-832, 1902.

    Contains notes on the locality of species of Ornithomimus and the age of the Judith River beds.

14. Osteology of Haplocanthosaurus, with description of a new species, and remarks on the probable habits of the Sauropoda and the age and origin of the Atlantosaurus beds.

    Carnegie Mus., Mem., vol. 2, no. 1, pp. 1-72, 6 pls., 28 figs., 1903.

15. Additional remarks on Diplodocus.

    Carnegie Mus., Mem., vol. 2, no. 1, pp. 72-75, 2 figs., 1903.

16. Discovery of remains of Astrodon (Pleurocœlus) in the Atlantosaurus beds of Wyoming.

    Carnegie Mus., Ann., vol. 2, pp. 9-14, 6 figs., 1903.

    Includes with the description a discussion of the synonymy and the age of the beds in which it occurs.

17. Relative age of the Lance Creek (Ceratops) beds of Converse County, Wyoming, the Judith River beds of Montana, and the Belly River beds of Canada.

    Am. Geol., vol. 31, pp. 369-375, 1903.

18. A new sauropod dinosaur [Haplocanthus] from the Jurassic of Colorado.

    Wash. Biol. Soc., Proc., vol. 16, pp. 1-2, 1903.

19. A new name for the dinosaur Haplocanthus Hatcher.

    Wash. Biol. Soc., Proc., vol. 16, p. 100, 1903.

    Proposes to substitute the name Haplocanthosaurus for Haplocanthus, preoccupied.

20. The Judith River beds.

    Science, new ser., vol. 17, pp. 471-472, 1903.

    Discusses the stratigraphic position of the Judith River beds.

21. An attempt to correlate the marine with the nonmarine formations of the middle west.

    Am. Phil. Soc., Proc., vol. 43, pp. 341-365, 2 figs., 1904. Abstract: Science, new ser., vol. 19, p. 717, 1904.

    Discusses conditions governing the formation of marine, brackish, and fresh-water beds, and their application to the correlation and relative age of various Jurassic and Cretaceous horizons of the middle west. A note discussing the views advanced in the paper is added by Mr. T. W. Stanton.

Hatcher (John B.)—Continued.

22. Two new Ceratopsia from the Laramie of Converse County, Wyoming.

Am. Jour. Sci., 4th ser., vol. 20, pp. 413-419, 2 pls., 1905.

Hatcher (John B.) and **Stanton** (T. W.).

1. The stratigraphic position of the Judith River beds and their correlation with the Belly River beds.

Science, new ser., vol. 18, pp. 211-212, 1903.

Hatcher (J. B.), **Stanton** (T. W.) and.

1. Geology and paleontology of the Judith River beds.

See **Stanton** (T. W.) and **Hatcher** (J. B.), 1.

Haverstock (R: S.).

1. Quicksilver.

Mg. & Sci. Press., vol. 84, p. 4, 1902.
Contains general notes on the occurrence and treatment of quicksilver ores, with descriptions of California deposits.

Hawes (George W.).

1. On a group of dissimilar eruptive rocks in Campton, New Hampshire.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 394-399, 1901. (From Am. Jour. Sci., 3d ser., vol. 17, pp. 147-151, 1879.)

2. The Albany granite, New Hampshire, and its contact phenomena..

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 400-414, 1901. (From Am. Jour. Sci., 3d ser., vol. 21, pp. 21-32, 1881.)

Haworth (Erasmus).

1. The Galena-Joplin lead and zinc district.

Min. Ind. for 1899, pp. 658-668, 2 figs., 1900.
Describes the general geology of the region and the occurrence of the ores.

2. Petroleum and natural gas in Kansas.

Eng. and Mg. Jour., vol. 72, p. 397, 1901.
Describes the geographic and geologic distribution of the oil and gas.

3. Geology and mining interests of Kansas.

Int. Mg. Cong., 4th session, Proc., pp. 196-200, 1901.
Describes the occurrence of economic minerals in the State.

4. Oil and gas in Kansas.

Eng. & Mg. Jour., vol. 73, p. 37, 1902.
Describes the developments in oil and gas in 1901.

5. The Kansas River flood of 1903.

Kans. Univ. Geol. Surv., Min. Res. for 1902, pp. 63-81, 19 pls., 1903.
Describes geologic effects of the flood of 1903 upon the flood plain of the Kansas River.

Haworth (Erasmus) and **McFarland** (D. F.).

1. The Dexter, Kansas, nitrogen gas well.

Science, new ser., vol. 21, pp. 191-193, 1905.
Describes the occurrence, character, flow, and composition of a natural gas, consisting chiefly of nitrogen, issuing from a well at Dexter, Kansas.

Haworth (Erasmus) and **Schrader** (F. C.).

1. Portland-cement resources of the Independence quadrangle, Kansas.

U. S. Geol. Surv., Bull. no. 260, pp. 506-509, 1905.
Describes the occurrence and character of the raw materials, and the composition of the product.

Haworth (Erasmus), and **Crane** (W. R.), **Adams** (George I.).

1. Economic geology of the Iola quadrangle, Kansas.

See **Adams** (George I.), **Haworth** (Erasmus), and **Crane** (W. R.), 1.

Haworth (E.), **Schrader** (F. C.) and.

1. Oil and gas of the Independence quadrangle, Kansas.

See **Schrader** (F. C.) and **Haworth** (E.), 1.

Haworth (E.), **Schrader** (F. C.) and—Continued.

2. Clay industries of the Independence quadrangle, Kansas

See **Schrader** (F. C.) and **Haworth** (E.), 2.

Hay (Oliver Perry).

1. The chronological distribution of the elasmobranchs.

Am. Phil. Soc., Trans., new ser., vol. 20, pp. 63–75, 1901.

2. Description of a new species of Baëna (B. hatcheri) from the Laramie beds of Wyoming.

Carnegie Mus., Annals, vol. 1, no. 2, pp. 325–326, 1 pl., 1902.

3. Snoutfishes of Kansas.

Abstract: Am. Geol., vol. 29, pp. 192–193, 1902.

4. Description of a new species of Cladodus (C. formosus) from the Devonian of Colorado.

Am. Geol., vol. 30, pp. 373–374, 1 fig., 1902.

5. Bibliography and catalogue of the fossil vertebrata of North America.

U. S. Geol. Surv., Bull. no. 179, 868 pp., 1902.

6. The composition of the shells of turtles.

Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 111–112, 1902.

7. On some recent literature bearing on the Laramie formation.

Am. Geol., vol. 32, pp. 115–120, 1903.

8. Description of a new genus and species of tortoise from the Jurassic of Colorado.

Carnegie Mus., Annals, vol. 2, pp. 201–203, 1 pl., 1903.

9. Two new species of fossil turtles from Oregon.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 237-241, 6 figs., 1903.

10. On certain genera and species of North American Cretaceous actinopterous fishes.

Am. Mus. Nat. Hist., Bull., vol. 19, pp. 1–95, 5 pls., 72 figs., 1903.

11. The snout-fishes of Kansas.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, p. 15, 1903.

12. On an important but not well-known locality furnishing Cretaceous fishes.

Abstract: Science, new ser., vol. 17, p. 219, 1903; Geol. Soc. Am., Bull., vol. 14, p. 542, 1904.

13. On some fossil turtles belonging to the Marsh collection in Yale University Museum.

Am. Jour. Sci., 4th ser., vol. 18, pp. 261-276, 6 pls., 7 figs., 1904.

14. Descriptions of two species of extinct tortoises, one new.

Phila. Acad. Nat. Sci., vol. 54, pp. 383–388, 7 figs., 1902.

15. On two new species of turtles from the Judith River beds of Montana.

Carnegie Mus., Annals, vol. 3, no. 1, pp. 178–182, 1 pl., 2 figs., 1904.

16. On the finding of skulls of Trionychidæ in the Bridger deposits of Wyoming.

Abstract: Science, new ser., vol. 19, p. 254, 1904.

17. A new gigantic tortoise from the Miocene of Colorado.

Abstract: Science, new ser., vol. 19, pp. 503–504, 1904.

18. The American Paleontological Society. Section A—Vertebrata.

Science, new ser., vol. 21, pp. 294–300, 1905.
Gives an account of the meeting and abstracts of papers presented.

19. [Phylogeny and classification of the Reptilia.]

Abstract: Science, new ser., vol. 21, pp. 295–296, 1905.

20. Meeting of section A of the American Paleontological Society.

Am. Geol., vol. 35, pp. 124–126, 1905.
Gives a brief account of the meeting and abstracts of papers presented.

Hay (Oliver Perry)—Continued.

21. The progress of vertebrate paleontology at the American Museum of Natural History, New York.

    Am. Geol., vol. 35, pp. 31-34, 1905.

22. The fossil turtles of the Bridger basin.

    Am. Geol., vol. 35, pp. 327-342, 1 fig., 1905.

    Describes the location and character of the Bridger beds and gives a general account of their chelonian fauna.

23. On the group of fossil turtles known as the Amphichelydia; with remarks on the origin and relationships of the suborders, superfamilies, and families of Testudines.

    Am. Mus. Nat. Hist., Bull., vol. 21, pp. 137-175, 5 figs., 1905.

24. A revision of the species of the family of fossil turtles called Toxochelyidæ, with descriptions of two new species of Toxochelys and a new species of Porthochelys.

    Am. Mus. Nat. Hist., Bull., vol. 21, pp. 177-185, 16 figs., 1905.

25. On the skull of a new trionychid, Conchochelys admirabilis, from the Puerco beds of New Mexico.

    Am. Mus. Nat. Hist., Bull., vol. 21, pp. 335-338, 3 figs., 1905.

Haycock (Ernest).

1. The geological history of the Gaspereau Valley, Nova Scotia.

    Nova Scotian Inst. Sci., Trans., vol. 10, pp. 361-375, 1 pl., 1902.

    Discusses the geologic history and structure of this area.

2. Fossils, possibly Triassic, in glaciated fragments in the bowlder-clay of Kings County, Nova Scotia.

    Nova Scotian Inst. Sci., Trans., vol. 10, pp. 376-378, 1902.

3. Geology of the west coast of Vancouver Island.

    Can. Geol. Surv., Summ. Rept. for 1902, pp. 74-90, 1903.

    Describes physiographic features, the general geology, the character and occurrence of igneous rocks, and the economic resources.

4. Geology of the county of Ottawa [Quebec].

    Can. Geol. Surv., Summ. Rept. for 1904, pp. 232-239, 1905.

Hayden (Horace Edwin).

1. Mr. Ralph Dupuy Lacoe.

    Wyoming Hist. and Geol. Soc., Proc. and Coll., vol 6, pp. 39-54, 1901; Am. Geol., vol. 28, pp. 335-344, 1 pl., 1901.

    Gives a sketch of his life.

Hayes (Charles Willard).

1. Geological relations of the iron-ores in the Cartersville district, Georgia.

    Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 403-419, 2 figs., 1901.

    Describes the stratigraphy and structure of the region and the character and occurrence of the iron, with notes on the occurrence of ocher and manganese.

2. The Arkansas bauxite deposits.

    U. S. Geol. Surv., 21st Ann. Rept., pt. 3, pp. 435-472, 5 pls., 1901. Abstract: Jour. Geol., vol. 9, pp. 737-739, 1901.

    Describes the general geologic and physiographic relations of the region, and the character, occurrence, and origin of the bauxite deposits.

3. Tennessee white phosphate.

    U. S. Geol. Surv., 21st Ann. Rept., pt. 3, pp. 473-485, 1 pl., 1901.

    Describes the character, occurrence, and origin of the phosphates of Perry County.

4. The asphalt deposits of Pike County, Arkansas.

    Eng. & Mg. Jour., vol. 74, p. 782, 1902.

    Contains notes on the geologic occurrence and gives a section of the strata.

Hayes (Charles Willard)—Continued.

5. Rome folio, Georgia-Alabama.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 78, 1902.

Describes the geographic and topographic features, the general geologic structure, the character and occurrence of Cambrian, Silurian, Devonian, Carboniferous, and Neocene (?) strata, and the occurrence of iron, bauxite, slate, and limestone.

6. The coal fields of the United States.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 7-24, 1 pl. (map), 1902.

Describes character, distribution and geologic occurrence of coal in the United States.

7. The southern Appalachian coal field.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 227-263, 3 pls., 1 fig., 1902.

Describes extent, general geologic relations, structure and stratigraphy of the field, the character and occurrence of the coal beds, the composition, properties, and production of coal.

8. Some facts and theories bearing on the accumulation of petroleum.

Abstract: Science, new ser., vol. 16, p. 1028, 1902.

9. Introduction to contributions to economic geology, 1902.

U. S. Geol. Surv., Bull. no. 213, pp. 9-14, 1903.

Describes the publications of the U. S. Geological Survey in which papers treating of economic subjects appear.

10. Investigation of nonmetalliferous economic minerals.

U. S. Geol. Surv., Bull. no. 213, pp. 29-30, 1903.

Describes character and scope of work done by the U. S. Geological Survey in the investigation of nonmetalliferous minerals.

11. Manganese ores of the Cartersville district, Georgia.

U. S. Geol. Surv., Bull. no 213, p. 232, 1903.

Describes briefly the character and occurrence of the manganese ores in this district.

12. Coal fields of the United States.

U. S. Geol. Surv., Bull. no. 213, pp. 257-269, 1903.

Describes distribution of coal in the United States, the geologic relations of the coal fields, fuel values of coals, and their development, production, and marketing.

13. Oil fields of the Texas-Louisiana Gulf Coastal Plain.

U. S. Geol. Surv., Bull. no. 213, pp. 345-352, 1903.

Describes topography, stratigraphy, and geologic structure of the region, and the occurrence, character, and utilization of the oil.

14. Asphalt deposits of Pike County, Arkansas.

U. S. Geol. Surv., Bull. no. 213, pp. 353-355, 1903.

Describes the character and occurrence of deposits of asphalt in sands of the Trinity group.

15. Origin and extent of the Tennessee white phosphates.

U. S. Geol. Surv., Bull. no. 213, pp. 418-423, 1903.

Describes varieties of white phosphate, the origin and extent of the deposits, and possible extensions of the field.

16. Introductions to "Contributions to economic geology, 1903."

U. S. Geol. Surv., Bull. no. 225, pp. 11-17, 1904.

Gives a brief statement regarding the publications of the United States Geological Survey bearing upon economic geology. Includes a list of the geologic folios, showing the mineral resources described in each.

17. Investigation of nonmetalliferous economic minerals.

U. S. Geol. Surv., Bull. no. 225, pp. 25-27, 1904.

A brief summary statement regarding investigations of nonmetalliferous economic minerals completed during the past year or in progress.

18. Contributions to economic geology, 1904. Introduction.

U. S. Geol. Surv., Bull. no. 260, pp. 11-18, 1905.

Explains the purpose of the bulletin and describes the publications of the Survey bearing upon economic geology.

19. Investigation of iron and nonmetalliferous economic minerals.

U. S. Geol. Surv., Bull. no. 260, pp. 28-31, 1905.

Reviews the work during the year 1904 of the U. S. Geological Survey upon iron and nonmetalliferous minerals of economic importance.

Hayes (Charles Willard) and **Eckel** (E. C.).

1. Iron ores of the Cartersville district, Georgia.

U. S. Geol. Surv., Bull. no. 213, pp. 233-242, 1903.

Describes the stratigraphy and geologic structure of this district and the character and occurrence of the iron ores.

2. Occurrence and development of ocher deposits in the Cartersville district, Georgia.

U. S. Geol. Surv., Bull. no. 213, pp. 427-432, 1903.

Hayes (Charles Willard), **Emmons** (S. F.).

1. Contributions to economic geology, 1902.

See **Emmons** (S. F.), **Hayes** (C. W.), 1.

2. Contributions to economic geology, 1903.

See **Emmons** (S. F.), **Hayes** (C. W.), 2.

3. Contributions to economic geology, 1904.

See **Emmons** (S. F.), **Hayes** (C. W.), 3.

Hayes (Charles Willard) and **Kennedy** (William).

1. Oil fields of the Texas-Louisiana Gulf Coastal Plain.

U. S. Geol. Surv., Bull. no. 212, 174 pp., 11 pls., 12 figs., 1903.

Describes topography and drainage of the Gulf Coastal Plain of Texas and Louisiana, the occurrence and character of Tertiary, Quaternary, and Recent formations, giving numerous sections and records of borings, and the location and development of the oil pools; discusses the origin of petroleum, conditions of accumulation, and structural features in this field, and the constitution, properties, and utilization of the oil.

Hayes (Charles Willard) and **Ulrich** (Edward O.).

1. Columbia folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 95, 1903.

Describes general relations and topography, character and occurrence of Ordovician, Silurian Devonian, and Carboniferous strata, geologic structure and history and mineral resources, including the occurrence, character, and origin of the phosphates. Includes a correlation table of Paleozoic formations and a generalized faunal chart for the western side of the Middle Tennessee basin.

Hayes (Charles Willard), **Vaughan** (T. W.) and **Spencer** (A. C.).

1. Report on a geological reconnaissance of Cuba.

Washington, 1901. 123 pp., 29 pls., 17 figs.

Describes the physiography, the general character and distribution of the igneous and sedimentary rocks, the geologic history and occurrence of gold, copper, manganese, iron, asphalts, oil, and coal.

Hayes (Seth).

1. The Shaw mastodon: an examination and description of mastodon and accompanying mammalian remains found near Cincinnati, June, 1894.

Ohio State Acad. Sci., 3d Ann. Rept., pp. 37-41, 1 pl. [1895].

Hayford (John F.).

1. A connection by precise leveling between the Atlantic and Pacific oceans.

Science, new ser., vol. 21, pp. 673-674, 1905.

Hays (Mabel).

1. Winoka gravels, supposed Tertiary deposits. Description of deposits.

Drury Coll., Bradley Field Geol. Station, Bull., vol. 1, pp. 19-21, 1904.

Describes the character and occurrence of gravel deposits in southwestern Missouri.

Haywood (J. K.).

1. Report of an analysis of the waters of the hot springs on the Hot Springs Reservation, Hot Springs, Garland County, Arkansas.

57th Cong., 1st sess., Sen. Doc. no. 282, Washington, pp. 11-78, 2 figs., 1902.

Headden (William P.).

1. Mineralogical notes.

Colo. Sci. Soc., Proc., vol. 7, pp. 141-150, 1903.

Describes the occurrence of tellurium and tellurite in Colorado, and the characters of cupro, descloizite from Arizona.

Headden (William P.)—Continued.

2. Significance of silicic acid in waters of mountain streams.

Am. Jour. Sci., 4th ser., vol. 16, pp. 169–184, 1903.

3. The Doughty springs, a group of radium-bearing springs, Delta County, Colorado.

Am. Jour. Sci., 4th ser., vol. 19, pp. 297–309, 1905.

4. Mineralogical notes, no. 2.

Colo. Sci. Soc., Proc., vol. 8, pp. 53–70, 1905.
Describes the characters and composition of minerals from various localities.

Hedburg (Eric).

1. The Missouri and Arkansas zinc mines at the close of 1900.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 379–404, 5 figs. (map and sections), and discussion, pp. 1022–1023, 1902.
Reviews the mining industry of this district, and discusses geologic position and origin of the ores.

Heilprin (Angelo).

1. Fossils and their teachings.

Sci. Am. Suppl., vol. 52, pp. 21472–21473, 1901.

2. How to interpret the facts of geology.

Sci. Am. Suppl., vol. 52, pp. 21488–21489, 1901.
Abstract of lecture delivered before the Philadelphia Academy of Natural Sciences.

3. Mont Pelée and the tragedy of Martinique.

Philadelphia, J. B. Lippincott Company, 1903. xiii, 325 pp., illus.

4. The activity of Mont Pelée.

Science, new ser., vol. 17, p. 546, 1903.

5. The ascending obelisk of the Montagne Pelée.

Pop. Sci. Monthly, vol. 63, pp. 467–468, 1 fig., 1903.

6. The ascending obelisk of the Montagne Pelée.

Science, new ser., vol. 18, pp. 184–185, 1903.

7. Mont Pelée—the eruptions of August 24 and 30, 1902.

Abstract: Science, new ser., vol. 17, p. 226, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

8. The nature of the Pelée tower.

Science, new ser., vol. 19, pp. 800–801, 1904.
Discusses the mode of formation of the spine of Mont Pelée.

9. The tower of Pelée: new studies of the great volcano of Martinique.

Philadelphia, J. B. Lippincott & Co., 1904. 62 pp., 23 pls., 4to.

10. Tower of Pelée.

Abstract: Intern. Geog. Cong., Eighth, Rept., p. 446, 1905.

11. Uniformity in mountain elevations.

Am. Geog. Soc., Bull., vol. 37, pp. 726–729, 1905.

Heine (R. E.).

1. The water resources of Washington. Water power.

Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 308–320, 3 pls., 1902.

Heiney (Wm. M.).

1. River bends and bluffs [Indiana].

Ind. Acad. Sci., Proc. for 1900, pp. 197–200, 3 figs., 1901.

Henderson (David B.).

1. Powell as a soldier.

Wash. Acad. Sci., Proc., vol. 5, pp. 100–105, 1903.

Henderson (Junius).

1. The overturns in the Denver basins [Colorado].

Jour. Geol., vol. 11, pp. 584–586, 2 figs., 1903; Colo. Univ., Studies, vol. 1, pp. 345–347, 2 figs., 1904.
Gives an explanation of the overturning of strata in this region.

Henderson (Junius)—Continued.

2. The Arapahoe glacier in 1903.

Jour. Geol., vol. 12, pp. 30-33, 1 fig., 1904.
Compares the status of the Arapahoe glacier of Colorado in 1903 with that of 1902.

3. Paleontology of the Boulder area [Colorado].

Colo. Univ., Studies, vol. 2, pp. 95-107, 1904.
Gives lists, with notes on their occurrence and character, of fossils found in formations of Cretaceous age in the Boulder, Colorado, area.

4. Extinct glaciers of Colorado.

Colo. Univ., Studies, vol. 3, pp. 39-44, 1905.
Discusses the occurrence of evidences of former glaciation in Colorado.

5. Arapahoe glacier in 1905.

Jour. Geol., vol. 13, p. 556, 1905.

Henretta (C. M.).

1. Bankhead coal mines [Alberta, Canada].

Can. Mg. Inst., Jour., vol. 8, pp. 215-220, 1 pl., 1905.
Includes notes on the occurrence and character of the coal seams.

Henrich (Carl).

1. The Guanajuato mining district [Mexico].

Mg. Mag., vol. 10, pp. 23-30, 101-108, 15 figs., 1904.
Describes the occurrence, geologic relations, and mining of the silver ores of this region.

Henry (Carl D.).

1. The white country granite of West Sugar Loaf or Bald Mountain, Boulder County, Colorado.

Colo. Sci. Soc., Proc., vol. 7, pp. 112-116, 1903.
Describes the occurrence, the megascopic and microscopic characters, and the composition of this rock.

Herrick (Clarence Luther).

1. Applications of geology to economic problems in New Mexico.

Int. Mg. Cong., 4th session, Proc., pp. 61-64, 1901.
Describes some of the geologic features and the occurrence of economic minerals.

2. Secondary enrichment of mineral veins in regions of small erosion.

Mg. & Sci. Press, vol. 87, p. 97, 1903.

3. A Coal-Measure forest near Socorro, New Mexico.

Jour. Geol., vol. 12, pp. 237-251, 10 figs., 1904.
Describes the general geologic structure of the Rio Grand Valley and the occurrence, character, and fauna of Coal-Measure strata in vicinity of Socorro, New Mexico.

4. Laws of formation of New Mexico mountain ranges.

Am. Geol., vol. 33, pp. 301-312, 393, 2 pls., 1904.
Describes the geologic structure and physiographic features of various mountain ranges of New Mexico.

5. The clinoplains of the Rio Grande.

Am. Geol., vol. 33, pp. 376-381, 1 fig., 1904.
Describes the character, occurrence, and origin of clinoplains in the vicinity of Socorro, New Mexico.

6. Lake Otero, an ancient salt lake basin in southeastern New Mexico.

Am. Geol., vol. 34, pp. 174-189, 1 pl., 3 figs., 1904.
Describes the geologic structure and history, physiographic features, and economic resources of the region, the character and relations of the formations present, and the extent and history of the ancient lake Otero.

Herrick (H. N.).

1. Gypsum deposits in New Mexico.

U. S. Geol. Surv., Bull. no. 223, pp. 89-99, 1 pl., 9 figs., 1904.
Describes character, occurrence, and geologic relations of the gypsum deposits of New Mexico.

Hershey (Oscar H.).

1. Peneplains of the Ozark Highlands.

Am. Geol., vol. 27, pp. 25–41, 1901.

Describes the Cretaceous and Tertiary peneplains, the Lafayette baselevel, the Ozarkian valleys and the modern valleys.

2. Metamorphic formations of northwestern California.

Am. Geol., vol. 27, pp. 225–245, 1901.

Describes the character, occurrence, and distribution of the pre-Cretaceous rocks of the Klamath Mountains.

3. On the age of certain granites in the Klamath Mountains.

Am. Geol., vol. 27, pp. 258–259, 1901.

Brief discussion of the geology of the region and of the intrusive origin of the granite.

4. The age of the Kansan drift sheet.

Am. Geol., vol. 28, pp. 20–25, 1901.

Describes the occurrence of the Kansan drift in Missouri and discusses its age.

5. The geology of the central portion of the Isthmus of Panama.

Univ. of Cal., Dept. of Geol., Bull., vol. 2, pp. 231–267, and map, 1901.

Describes the physiographic features and the occurrence and character of several formations. Discusses the relations of the crust movements of the region.

6. On the age of certain granites in the Klamath Mountains [California].

Abstract: Jour. Geol., vol. 9, pp. 76–77, 1901; Geol. Soc. Am., Bull., vol. 12, p. 501, 1901.

Contains notes on the occurrence of the granites and on the geologic history of the region.

7. An unusual type of auriferous deposit.

Science, new ser., vol. 13, pp. 869–871, 1901.

Describes occurrence of gold in a semidecomposed rock mass in California and discusses the mode of deposition of the gold.

8. The significance of the term Sierran.

Am. Geol., vol. 29, pp. 88–95, 1902.

Discusses the recent earth movements in the Sierra Nevada region and the use of the terms Ozarkian and Sierran.

9. Some crystalline rocks of Southern California.

Am. Geol., vol. 29, pp. 273–290, 1902.

Describes the character, occurrence, and distribution of probable pre-Paleozoic crystalline granites, schists, etc., and of certain quartzite and limestone strata in this region.

10. Some Tertiary formations of Southern California.

Am. Geol., vol. 29, pp. 349–372, 1902.

Describes volcanic and sedimentary beds of the region.

11. The significance of certain Cretaceous outliers in the Klamath region, California.

Am. Jour. Sci., 4th ser., vol. 14, pp. 33–37, 1902.

Describes the occurrence and character of the Cretaceous sediment and the geological history of this region.

12. Boston Mountain physiography.

Jour. Geol., vol. 10, pp. 160–165, 1902.

Discusses topographic development of west central Arkansas and reviews a paper by A. H. Purdue on "Physiography of the Boston Mountain, Arkansas."

13. Neocene deposits of the Klamath region, California.

Jour. Geol., vol. 10, pp. 377–392, 1902.

Describes the occurrence of these deposits and the conditions under which they were accumulated.

14. The Quaternary of Southern California.

Univ. Cal., Dept. Geol., Bull., vol. 3, pp. 1-30, 1 pl., 1902.

Describes orographic movements, erosion phenomena, and deposits of Quaternary time in this region.

15. A supposed early Tertiary peneplain in the Klamath region, California.

Science, new ser., vol. 15, pp. 951-954, 1902.

Discusses the evidences for the ancient peneplain character of the region and the date of formation of the peneplain.

Hershey (Oscar H.)—Continued.

16. Some evidence of two glacial stages in the Klamath Mountains in California.

Am. Geol., vol. 31, pp. 139–156, 1903.

Describes occurrence of remains of a fossil elephant in glacial deposits, the character and occurrence of glacial deposits, the terrace formations, and gorges in this region.

17. Structure of the southern portion of the Klamath Mountains, California.

Am. Geol., vol. 31, pp. 231–245, 1903.

Describes the general geologic structure and geologic history of the region.

18. The Sierran valleys of the Klamath region, California.

Jour. Geol., vol. 11, pp. 155–165, 1903.

Describes physiographic features and discusses physiographic history of the region.

19. The relation between certain river terraces and the Glacial series in northwestern California.

Jour. Geol., vol. 11, pp. 431–458, 1903.

Describes location, materials, and characteristics of river terraces, and discusses their relation to the stages of the Glacial series and the climatic conditions and causes of glaciation.

20. Certain river terraces of the Klamath region, California.

Am. Jour. Sci., 4th ser., vol. 16, pp. 240–250, 1903.

Describes river terraces in the region and discusses their formation and relation to the Glacial series.

21. The Bragdon formation in northwestern California.

Am. Geol., vol. 33, pp. 248–256, 347–360, 1904.

Discusses the occurrence, character, and geologic relations of the Bragdon and associated formations, and presents evidences for the Jurassic age of the Bragdon.

22. The river terraces of the Orleans basin, California.

Cal. Univ., Dept. Geol., Bull., vol. 3. pp. 423–475, 1904.

Outlines briefly the bed-rock geology and geomorphogeny of the region, gives detailed descriptions of the occurrence and characteristic features of the terrace remnants, and discusses the problems presented by them and their correlation with the Quaternary terrace system of other portions of California.

Herzer (H.).

1. Psaronius.

Ohio State Acad. Sci., 5th Ann. Rept., pp. 55–58, 1897.

Gives description and critical remarks upon this fossil plant.

2. Six new species, including two new genera, of fossil plants.

Ohio State Acad. Sci., 9th Ann. Rept., pp. 22–29, 2 figs., 3 pls., 1901.

3. A new fossil sponge from the Coal Measures [Ohio].

Ohio State Acad. Sci., 9th Ann. Rept., pp. 30–31, 1 pl., 1901.

4. New fossil plants from the Carboniferous and Devonian.

Ohio State Acad. Sci., 10th Ann. Rept., pp. 40–48, 3 figs., 3 pls., 1902.

5. New fossils from the Corniferous, Hamilton, and Medina shales.

Ohio State Acad. Sci., 10th Ann. Rept., pp. 49–66, 7 pls., 1902.

Hess (Frank L.) and **Graton** (L. C.).

1. The occurrence and distribution of tin.

U. S. Geol. Surv., Bull., no. 260, pp. 161–187, 1905.

Describes the occurrence of tin ores in various parts of the world and States of the Union, and gives a bibliography of tin deposits.

Hess (F. L.), **Prindle** (L. M.) and.

1. Rampart placer region [Alaska].

See **Prindle** (L. M.), and **Hess** (F. L.), 1.

Hessler (Robert).

1. The medicinal properties and uses of Indiana mineral water.

Ind., Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 159–226, 1903.

Heurteau (Ch. E.).

1. Les charbons gras de la Pennsylvanie et de la Virginie occidentale.

   Ann. des Mines, 10th ser., vol. 3, pp. 379–475, 12 figs., 1903.

   Describes the general geology of the bituminous coal regions of Pennsylvania and West Virginia, the occurrence of the coal seams, the composition and fuel values of the coals, and the mining, transportation, and sale of coal.

2. L'industrie du pétrole en Californie.

   Ann. des Mines, 10th ser., vol. 4, pp. 215–249, 1 pl., 4 figs., 1903.

   Describes the location and general geology of the petroleum field of southern California, and the character, production, and utilization of the petroleum, and compares it with that produced in Texas.

Hewett (G. C.).

1. Notes on southwestern Utah and its iron ores.

   Colo. Sci. Soc., Proc., vol. 7, pp. 55–66, 11 figs., 1902.

   Contains observations on the geology and occurrence of the iron ores.

2. The age of the homestake lode, South Dakota.

   Eng. & Mg. Jour., vol. 75, pp. 563–564, 1903.

   Discusses the occurrence and the origin of the gold.

3. [Discussion of paper by W. H. Weed, "Section across the Sierra Madre Occidental of Mexico."]

   Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1059–1060, 1903.

   Adds observations upon the geology of the region.

Hice (Richard R.).

1. Northward flow of ancient Beaver River.

   Geol. Soc. Am., Bull., vol. 14, pp. 297–304, 5 pls., 1 fig., 1903.

   Describes history of Beaver River and discusses evidence of potholes for showing direction of flow.

2. The clays of the upper Ohio and Beaver River region.

   Am. Ceramic Soc., Trans., vol. 7, pt. 2, 14 pp., 1905.

   Describes the general geology of the Carboniferous and Quaternary deposits of western Pennsylvania, and particularly the geologic occurrence and character of the clays.

Hidden (William E.).

1. Some results of late mineral research in Llano County, Texas.

   Am. Jour. Sci., 4th ser., vol. 19, pp. 425–433, 4 figs., 1905.

   Describes the occurrence and characters and radio-activity of minerals occurring at Barringer Hill, Llano County, Texas.

Higgins (Edward, jr.).

1. Zinc mining and smelting in southwestern Virginia.

   Eng. & Mg. Jour., vol. 79, pp. 608–610, 4 figs., 1905.

   Describes the occurrence and geologic relations of zinc ores.

Híjar (Jerónimo).

1. Ligeros datos sobre los criaderos de Peñoles (Oax.) y Tamazula (Jal.), [México].

   Soc. Geol. Mex., Bol., t. 1, pp. 207–212, 1905.

   Gives some account of the character and occurrence of the ore deposits of these localities, containing principally gold.

Hilgard (E. W.).

1. A historical outline of the geological and agricultural survey of the State of Mississippi.

   Am. Geol., vol. 27, pp. 284–311, 1901.

   Gives an account of the work of this organization and a list of its publications.

2. A sketch of the pedological geology of California.

   Abstract: Jour. Geol., vol. 9, pp. 74–75, 1901; Geol. Soc. Am., Bull., vol. 12, pp. 499–500, 1901.

   General notes on the soils of the State.

3. The débris fans of the arid region in their relation to the water supply.

   Abstract: Science, new ser., vol. 15, p. 414, 1902.

   Describes the structure of fans at the mouths of canyons and their relations to water supply

Hilgard (E. W.)—Continued.

4. The Grand Gulf formation.

Science, new ser., vol. 18, pp. 180-182, 1903.
Describes lithologic and other characteristics of the Grand Gulf formation.

5. The valley of southern California.

Abstract: Jour. Geol., vol. 11, p. 96, 1903.

6. The prairie mounds of Louisiana.

Science, new ser., vol. 21, pp. 551-552, 1905.
Discusses the origin of these mounds.

Hill (Benjamin F.).

1. The Terlingua quicksilver deposits, Brewster County, Texas.

Texas Univ. Mineral Surv., Bull. no. 4, 74 pp., 21 pls., 10 figs., 1902.
Gives a brief account of the physiography, geologic structure, and occurrence of the Cretaceous and igneous rocks. Describes the character and occurrence of the quicksilver deposits and associated minerals and discusses the mode of occurrence of the ores.

2. The occurrence of the Texas mercury minerals.

Am. Jour. Sci., 4th ser., vol. 16, pp. 251-252, 1903.

3. Gypsum deposits in Texas.

U. S. Geol. Surv., Bull. no. 223, pp. 68-73, 1 fig., 1904.
Describes character, occurrence, and economic development of gypsum deposits in Texas.

4. Das Vorkommen der texanischen Quecksilbermineralien.

Zeitsch. f. Krystal. u. Min., Bd. 39, 2 pp., 1904.
Describes the occurrence in Texas of minerals containing quicksilver.

Hill (B. F.), **Kemp** (J. F.) and.

1. Preliminary report on the pre-Cambrian formations in parts of Warren, Saratoga, Fulton, and Montgomery counties (New York).

See **Kemp** (J. F.) and **Hill** (B. F.), 1.

Hill (Robert T.).

1. The coast prairie of Texas.

Science, new ser., vol. 14, pp. 326-328, 1901.
Describes the evidences of differential movements in this region and its bearing on the occurrence of oil.

2. Geographic and geologic features of Mexico.

Eng. & Mg. Jour., vol. 72, pp. 561-564, 2 figs., 1901.
Describes the physiography and geology of the country.

3. Geography and geology of the Black and Grand prairies, Texas, with detailed descriptions of the Cretaceous formations and special reference to artesian waters.

U. S. Geol. Surv., 21st Ann. Rept., pt. 7, 666 pp., 71 pls., 80 figs., 1901.
Describes physiographic and drainage features, the character and occurrence of Azoic, Cambrian, Ordovician, Carboniferous, Permo-Triassic, and Cretaceous rocks, and the conditions and occurrence of artesian waters. The nomenclature, classification, correlation, character, and occurrence of the Cretaceous rocks are described in detail, with numerous sections, faunal lists, and figures of characteristic fossils and typical exposures, and the geography and conditions of deposition prevailing in Cretaceous times are discussed.

4. The geographic and geologic features and their relation to the mineral products of Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 163-178, 2 figs., 1902.

5. The Beaumont oil field, with notes on other oil fields of the Texas region.

Franklin Inst., Jour., vol. 154, pp. 143-156, 2 figs., pp. 225-238, 263-281, 1902.
Describes the occurrence and geologic relations of the oil-bearing strata of Texas.

6. [Report to the National Geographic Society on volcanic disturbances in the West Indies.]

Nat. Geog. Mag., vol. 13, pp. 225-267, 14 figs., 1902.
Contains an account of the author's observations of the phenomena attending the eruptions in 1902.

Hill (Robert T.)—Continued.

7. The upland placers of La Cienega, Sonora, Mexico.

Eng. & Mg. Jour., vol. 73, pp. 132-134, 7 figs., 1902.
Describes the occurrence of the gold and the method of dry washing.

8. The cinnabar deposits of the Big Bend province of Texas.

Eng. & Mg. Jour., vol. 74, pp. 305-307, 4 figs., 1902.
Describes the geologic occurrence of the cinnabar deposits in this area.

9. The Beaumont oil-field, with notes on other oil-fields of the Texas region.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 363-405, 2 figs., 1903.
Discusses origin and occurrence of oil, describes geography, occurrence, and character of sedimentary strata of southeastern Texas, the situation, extent, and production of different oil-fields, the discovery, development, geology, and structural features of the Beaumont field, and discusses the origin of its oil.

10. The Santa Eulalia district, Mexico.

Eng. & Mg. Jour., vol. 76, pp. 158-160, illus., 1903.
Describes the general geology and the character and occurrence of the ore bodies.

11. The ore deposits of Cananea [Mexico].

Eng. & Mg. Jour., vol. 76, p. 421, 1903.
Gives observations upon the general geology, structural features, and the origin of the ores.

12. Cananea revisited.

Eng. & Mg. Jour., vol. 76, pp. 1000-1001, 1903.
Describes the geology of the region, the occurrence and sequence of the igneous rocks, the fissuring and faulting, and the occurrence and origin of the copper ore deposits.

13. The geologic and physiographic history of the Lesser Antilles.

Abstract: Science, new ser., vol. 17, pp. 225-226, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

14. The Guanajuato mining district [Mexico].

Eng. & Mg. Jour., vol. 77, pp. 599-601, 642-644, 7 figs., 1904.
Includes observations on the geology of the region and the occurrence and character of the gold and silver ores.

15. Report upon the geology of the Santo Domingo placer fields, Magdalena district, Sonora, Mexico.

Greene Consolidated Gold Company [Prospectus], New York, pp. 12-24, 10 pls., 1904.
Describes the location and general geology of the district, and the character, occurrence, and geologic relations of sedimentary formations, of igneous rocks, and of placer gold deposits, and discusses the source of the gold.

16. Pelé and the evolution of the Windward archipelago.

Geol. Soc. Am., Bull., vol. 16, pp. 243-288, 5 pls., 1905.
Outlines the eruption phenomena of Mont Pelé, and from the study of these phenomena and data furnished by physiographic, stratigraphic, and paleontologic investigations, deduces the geologic history of the Windward Islands, and discusses the nature and causes of volcanism.

17. Enrichment in fissure veins.

Eng. & Mg. Jour., vol. 80, pp. 645-646, 1905.

18. Physical history of the Windward Islands as illustrated in the larger story of Pelée—a study of volcanic and oceanic geography.

Abstract: Intern. Geog. Cong., Eighth, Rept., pp. 244-245, 1905.

19. The physical geography of Mexico—an introduction to the social, political, and economic geography of the republic.

Abstract: Intern. Geog. Cong., Eighth, Rept., pp. 765-766, 1905.

Hill (Robert T.) and **Vaughan** (T. Wayland).

1. Austin folio, Texas.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 76, 1902.
Describes geographic and topographic features, general geologic relations, the character and occurrence of Cretaceous, Tertiary, and Quaternary formations, and the occurrence of economic products.

Hille (F.).

1. The iron ore deposits of western Ontario and their genesis.

Can. Mg. Inst. Jour., vol. 5, pp. 49-61, 6 pls., 1902.

Describes the geologic and geographic position of the ore deposits, and discusses their formation.

2. The Baraboo iron ore.

Eng. & Mg. Jour., vol. 77, p. 875, 1904.

Discusses the geologic age and origin of the iron ores of Baraboo, Wisconsin.

3. Genesis of the Animikie iron range [Ontario].

Can. Mg. Inst., Jour., vol. 6, pp. 245-287, 1904.

Discusses the geologic data bearing upon the presence and amount of iron ore north of the International Boundary in this region, the character, occurrence, classification, and nomenclature of Archean and Algonkian formations, the origin, constituents, and metamorphism of their rocks, and the origin of the iron ores.

4. A correction in the classification of our gold formation.

Can. Mg. Inst., Jour., vol. 8, pp. 183-191, 3 figs., 1905.

Discusses the relations of the rocks in which the Algoma gold deposits occur.

Hillebrand (W. F.).

1. Chemical discussion of analyses of volcanic ejecta from Martinique and St. Vincent.

Nat. Geog. Mag., vol. 13, pp. 296-299, 1902.

2. The composition of yttrialite, with a criticism of the formula assigned to thalénite.

Am. Jour. Sci., 4th ser., vol. 13, pp. 145-152, 1902.

Discusses Benedicks' formula for thalénite and presents the author's results of the chemical properties of yttrialite.

3. Critical review of the second series of analyses of materials for the Portland cement industry made under the auspices of the New York section of the Society of Chemical Industry.

Am. Chem. Soc., Jour., vol. 25, pp. 1180-1208, 1903.

4. Emmonsite (?) from a new locality.

Am. Jour. Sci., 4th ser., vol. 18, pp. 433-434, 1904.

Describes the occurrence, optical and other characters, and chemical composition of a mineral provisionally regarded as emmonsite, from Cripple Creek, Colorado.

5. Red beryl from Utah.

Am. Jour. Sci., 4th ser., vol. 19, pp. 330-331, 1905.

6. Two tellurium minerals from Colorado.

U. S. Geol. Surv., Bull. no. 262, pp. 55-57, 1905.

Describes occurrence and composition of emmonsite (?) and tetradymite.

7. The composition of yttrialite, with a criticism of the formula assigned to thalénite.

U. S. Geol. Surv., Bull. no. 262, pp. 61-68, 1905.

8. Preliminary announcement concerning a new mercury mineral from Terlingua, Texas.

Science, new ser., vol. 22, p. 844, 1905.

Hillebrand (W. F.) and **Penfield** (S. L.).

1. Some additions to the alunite-jarosite group of minerals.

Am. Jour. Sci., 4th ser., vol. 14, pp. 211-220, 1902. Zeitschrift für Krystallographie, vol. 36, pp. 545-554, 1902. [German translation.] U. S. Geol. Surv., Bull. no. 262, pp. 32-41, 2 figs., 1905.

Describes the occurrence, optical and other characters, and chemical composition of several alunite-jarosite minerals.

Hillebrand (W. F.) and **Ransome** (F. L.).

1. On carnotite and associated vanadiferous minerals in western Colorado.

U. S. Geol. Surv., Bull. no. 262, pp. 9-31, 1905.

Describes occurrence, character, origin, and chemical composition.

Hillebrand (W. F.), **Lindgren** (Waldemar) and.

1. Minerals from the Clifton-Morenci district, Arizona.

See **Lindgren** (Waldemar) and **Hillebrand** (W. F.), 1.

Hillebrand (W. F.), **Schaller** (W. T.) and.

1. Crystallographical and chemical notes on lawsonite.

See **Schaller** (W. T.) and **Hillebrand** (W. F.), 1.

2. Notes on lawsonite.

See **Schaller** (W. T.) and **Hillebrand** (W. F.), 2.

Hills (R. C.).

1. Spanish Peaks folio, Colorado.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 71, 1901.
Describes the geographic features, the character and occurrence of the Cretaceous, Eocene, and Neocene strata, the geologic structure, the igneous rocks, and the occurrence of coal and artesian water.

2. Eocene and earlier beds of the Huerfano Basin, Colorado, and their relation to the Cretaceous.

Abstract: Science, new ser., vol. 15, p. 417, 1902.
Discusses the correlation of these beds.

3. The Oscuro Mountain meteorite [New Mexico].

Colo. Sci. Soc., Proc., vol. 6, pp. 30-33, illus. [1902].
Describes the occurrence and the characters of this meteorite.

Hind (Wheelton).

1. The type of Aviculipecten.

Am. Geol., vol. 34, pp. 200-201, 1904.

Hitchcock (A. S.).

1. Controlling sand dunes in the United States and Europe.

Nat. Geog. Mag., vol. 15, pp. 43-47, illus., 1904.

Hitchcock (C. H.).

1. Tuff cone at Diamond Head, Hawaiian Islands.

Abstract: Geol. Soc. Am., Bull., vol. 12, p. 462, 1901; Science, new ser., vol. 13, p. 98, 1901.

2. The story of Niagara.

Amer. Antiquarian, vol. 23, pp. 1-24, illus., 1901.
Describes the geological history of the region about Niagara Falls, the geological history of the Niagara Cataract and River, and discusses the rate of recession of the falls and the estimates of age in years.

3. Mohokea caldera on Hawaii.

Geol. Soc. Am., Bull., vol. 14, pp. 6-8, 1903.

4. Notice of a species of Acidaspis from a boulder of Marcellus shale, found in drift at West Bloomfield, New Jersey.

Am. Mus. Nat. Hist., Bull., vol. 19, pp. 97-98, pl. 6, 1903.

5. Protection of terraces in the upper Connecticut River.

Abstract: Science, new ser., vol. 17, p. 224, 1903.

6. New studies in the Ammonoosuc district of New Hampshire.

Geol. Soc. Am., Bull., vol. 15, pp. 461-482, 3 pls., 1904.
Describes the occurrence, with lists of forms identified, of Silurian fossils, and the occurrence, characters, and geologic relations of Silurian and perhaps other Paleozoic sedimentary strata, in large part metamorphosed, and of igneous rocks. The paper includes a description of Dalmanites lunatus by Avery E. Lambert.

7. Glaciation of the Green Mountains.

Montpelier Vt., Argus and Patriot Press, 1904. 21 pp. [Private publication.]
Describes various evidences of glacial action upon high summits in the Green Mountains in Vermont and the Adirondacks of New York, and discusses glaciation in New England and New York.

Hitchcock (C. H.)—Continued.

8. Glaciation of the Green Mountain Range.

Vt. Geol. Surv., Rept. State Geol., IV, pp. 67-85, 1904.

9. Kilauea again active.

Science, new ser., vol. 21, p. 551, 1905.

Notes the renewal of activity of the volcano Kilauea in the Hawaiian Islands.

10. The geology of Littleton, New Hampshire.

Cambridge, U. S. A., 1905. Pp. 1-32, 1 pl., 1 fig. [Reprinted from History of Littleton. Copyright, 1905, by the Town of Littleton.]

Describes the general geology, the character, occurrence, and relations of igneous and schistose rocks, Silurian and Devonian strata, and Glacial deposits, and the economic resources of the township.

11. Fresh-water springs in the ocean.

Pop. Sci. Mo., vol. 67, pp. 673-683, 1905.

Contains notes upon the geologic structure and underground water conditions of Oahu, one of the Hawaiian Islands, and of Florida.

Hixon (Hiram W.).

1. Geology of the Sudbury district [Ontario].

Eng. & Mg. Jour., vol. 79, pp. 334-335, 1905.

2. Volcanoes and earthquakes.

Eng. & Mg. Jour., vol. 79, p. 1245, 1905.

Offers an explanation of these phenomena.

Hobbs (William Herbert).

1. Connecticut rivers.

Science, new ser., vol. 14, pp. 1011-1012, 1901.

Discusses a recent review by W. M. Davis.

2. The Newark system of the Pomperaug Valley, Connecticut.

U. S. Geol. Surv., 21st Ann. Rept., pt. 3, pp. 7-160, 17 pls., 59 figs., 1901.

Gives a sketch of present knowledge regarding this system, describes the character of the sedimentary and igneous rocks, and discusses the deformation and degradation of the region.

3. The river system of Connecticut.

Jour. Geol., vol. 9, pp. 469-485, 2 pls., 2 figs., 1901.

Describes the occurrence and origin of the jointing and faulting in the Pomperaug Valley, the occurrence of certain intersecting series of parallel lines called troughs, which occupy the drainage channels for varying distances.

4. Diamondiferous deposits in the United States.

Min. Ind. for 1900, pp. 301-304, 1901.

Briefly describes occurrence and distribution.

5. The old tungsten mine at Trumbull, Conn.

U. S. Geol. Surv., 22d Ann. Rept., pt. 2, pp. 7-22, 5 pls., 1 fig., 1901.

Describes petrology, geologic structure, and occurrence of ore bodies of this locality.

6. Still rivers of western Connecticut.

Geol. Soc. Am., Bull., vol. 13, pp. 17-26, 2 pls., 3 figs., 1901.

Describes the peculiar drainage features of the region and the conditions determining the course of the rivers, and discusses the theories that have been advanced.

7. Edward Orton.

Wis. Acad. Sci., Trans., vol. 13, pt. 2, pp. 610-613, por., 1902.

8. Emigrant diamonds in America.

Smithsonian Inst., Ann. Rept. for 1901, pp. 359-366, 2 figs., 3 pls., 1902. Reprinted from Pop. Sci. Monthly, vol. 56, 1899.

Describes the occurrence of diamonds in glacial materials, principally in Wisconsin.

9. Former extent of the Newark system.

Geol. Soc. Am., Bull., vol. 13, pp. 139-148, 5 figs., 1902.

Gives a summary of the views of various geologists regarding this series, and discusses the conditions under which the beds were deposited.

Hobbs (William Herbert)—Continued.

10. The mapping of the crystalline schists. Part I. Methods.

Jour. Geol , vol. 10, pp. 780-792, 1 pl., 1 fig., 1902.

Describes methods of studying the occurrence, character, and relations of crystalline schists.

11. The mapping of the crystalline schists. II. Basal assumptions.

Jour. Geol., vol. 10, pp. 858-890, 11 figs., 1902.

Discusses the mechanics of deformation and the criteria for recognizing folds and faults.

12. An instance of the action of the ice sheet upon slender projecting rock masses.

Am. Jour. Sci., 4th ser., vol. 14, pp. 399-403, 1 pl., 2 figs., 1902.

Describes the glacial phenomena in the Pomperaug Valley (Connecticut).

13. A new meteorite from Algoma, Kewaunee County, Wisconsin.

Abstract: Science, new ser., vol. 16, p. 260, 1902.

14. The geological structure of the southwestern New England region.

Am. Jour. Sci., 4th ser., vol. 15, pp. 437-446, 1903.

Discusses structural features of the region and their origin.

15. Meteorite from Algoma, Wisconsin.

Geol. Soc. Am., Bull., vol. 14, pp. 97-116, 5 pls., 1903.

Describes surface, composition, and texture.

16. Tungsten mining at Trumbull, Conn.

U. S. Geol. Surv., Bull. no. 213, p. 98, 1903.

Describes the occurrence of the ore and methods employed in mining and extracting the metal.

17. The frontier of physiography.

Science, new ser., vol. 18, pp. 538-540, 1903.

18. Geology of the river channels about Manhattan Island.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 74-76, 1903.

19. A record of post-Newark depression and subsequent elevation within the area of southwestern New England.

Abstract: Science, new ser., vol. 17, p. 223, 1903.

20. Evidences of post-Newark normal faulting in the crystalline rocks of southwestern New England.

Abstract: Science, new ser., vol. 17, p. 223, 1903.

21. Configuration of the rock floor of the vicinity of New York.

Abstract: Science, new ser., vol. 17, p. 298, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

22. Lineaments of the Atlantic border region.

Geol. Soc. Am., Bull., vol. 15, pp. 483-506, 3 pls., 4 figs., 1904. Intern. Geog. Cong., Eighth, Rept., pp. 193-203, 1 pl., 1905.

Describes the orientation of earth lineaments, namely, mountain ranges, ridges, borders of plateaus, drainage lines, coast lines, boundary lines of geologic formations, fall lines, boundaries of physiographic provinces, etc.

23. Tectonic geography of southwestern New England and southeastern New York.

Abstract: Geol. Soc. Am., Bull., vol. 15, pp. 554-557, 1904; Science, new ser., vol. 19, p. 527, 1904; Sci. Am. Suppl., vol. 57, p. 23446, 1904.

Discusses the relations of fault systems to one another in the area considered, and related geographic features.

24. Origin of the channels surrounding Manhattan Island, New York.

Geol. Soc. Am., Bull., vol. 16, pp. 151-182, 1 pl., 1905.

Describes in detail various data secured bearing upon the configuration of the suface of the rock beneath the Manhattan Island area, and discusses the origin of the water channels.

25. The correlation of fracture systems and the evidences for planetary dislocations within the earth's crust.

Wis. Acad. Sci., Trans., vol 15, pp. 15-29, 1 pl., 1905.

26. Examples of joint-controlled drainage from Wisconsin and New York.

Jour. Geol., vol. 13, pp. 363-374, 7 figs., 1905.

Hobbs (William Herbert)—Continued.

27. The configuration of the rock floor of Greater New York.

U. S. Geol. Surv., Bull. no. 270, 96 pp., 5 pls., 6 figs., 1905.

Reviews the geological studies of the New York City area of previous writers, and describes investigations upon the rock floor of Greater New York.

28. Contributions from the mineralogical laboratory of the University of Minnesota.

Am. Geol., vol. 36, pp. 179-186, 1 pl., 2 figs., 1905.

Gives notes upon the composition, characters, and crystallographic features of minerals from various localities.

Hodgdon (F. W.).

1. [In discussion of paper by J. P. Frizell on "Tidal scour in harbors, etc."]

Assoc. Eng. Soc., Jour., vol. 28, pp. 85-87, 1902.

Contains notes on scour in Boston Harbor.

Hoeing (J. B.).

1. The oil and gas sands of Kentucky.

Ky. Geol., Surv., Bull. no. 1 (preliminary part), 233 pp., 10 pls. and 3 maps, 1905.

Describes the general geology of oil and gas, the geological relations, character, and occurrence of oil and gas bearing strata, and gives numerous well records. An appendix contains lists of elevations above sea of points in Kentucky.

Hoen (A. B.).

1. Discussion of the requisite qualities of lithographic limestone, with report on tests of the lithographic stone of Mitchell County, Iowa.

Iowa Geol. Surv., vol. 13, pp. 339-352, 1 pl., 1903.

Hoernes (Rudolf).

1. Die vulkanischen Ausbrüche auf den Kleinen Antillen.

Steiermark naturw. Ver., Mitt., Jahrg. 1902, Heft 39, pp. LXXXI-XCII, 1903.

Describes the volcanic eruptions and the attendant phenomena that took place in the Lesser Antilles in 1902.

Hoffmann (G. Christian).

1. Report of the section of chemistry and mineralogy.

Can. Geol. Surv., new ser., vol. 11, Rept. R., 55 pp., 1901. Published in 1900.

2. On some new mineral occurrences in Canada.

Am. Jour. Sci., 4th ser., vol. 11, pp. 149-153, 1901.

3. On some new mineral occurrences in Canada.

Am. Jour. Sci., 4th ser., vol. 12, pp. 447-448, 1901.

Describes datolite and faujasite.

4. Report of the section of chemistry and mineralogy.

Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 1 R-64R, 1902.

5. On the occurrence of chrompicotite in Canada.

Am. Jour. Sci., 4th ser., vol. 13, pp. 242-243, 1902.

Describes its occurrence, characters, and chemical composition.

6. Report of the section of chemistry and mineralogy.

Can. Geol. Surv., Ann. Rept., new ser., vol. 13, 67 pp., 1903.

7. Souesite, a native iron-nickel alloy occurring in the auriferous gravels of the Fraser, province of British Columbia, Canada.

Am. Jour. Sci., 4th ser., vol. 19, pp. 319-320, 1905.

8. Chemistry and mineralogy.

Can. Geol. Surv., Summ. Rept. for 1904, pp. 337-349, 1905.

Includes notes on the examination and occurrence of various minerals.

Hogarty (Barry).

1. The andesite of Mount Sugar Loaf, Boulder County, Colorado.

Colo. Sci. Soc., Proc., vol. 6, pp. 171-185 [1902].

Describes the occurrence, the megascopic and microscopic characters, and the composition of the rock.

Holder (Charles F.).

1. A remarkable salt deposit.

   Sci. Am., vol. 84, p. 217, 2 figs., 1901.
   Describes occurrence of salt on the Salton Desert, in California.

2. Erosion on the Pacific coast.

   Sci. Am., vol. 85, p. 8, 3 figs., 1901.
   Describes some of the physiographic features of the California coast.

3. Meteorites and their collectors.

   Sci. Am., vol. 90, p. 10, 1904.

4. Natural monuments.

   Sci. Am., vol. 90, p. 139, 1904.
   Describes pillars and other features resulting from erosion.

Hole (Allen D.), **Moore** (Joseph) and.

1. Concerning well-defined ripple marks in the Hudson River limestone, Richmond, Indiana.

   See **Moore** (J.) and **Hole** (A. D.), 1.

Holland (W. J.)

1. In memoriam, John Bell Hatcher.

   Carnegie Mus., Ann., vol. 2, pp. 597–604, 1 pl. (por.), 1904; Geol. Mag., dec. 5, vol. 1, pp. 568–573, 1904.

2. A new crocodile from the Jurassic of Wyoming.

   Carnegie Mus., Ann., vol. 3, pp. 431–434, 1 pl. and 1 fig., 1905.

3. The hyoid bone in Mastodon americanus.

   Carnegie Mus., Ann., vol. 3, pp. 464–467, 5 figs., 1905.

Hollick (Arthur).

1. A reconnoissance of the Elizabeth Islands [Massachusetts].

   N. Y. Acad. Sci., Annals, vol. 13, pp. 387–418, 8 pls., 1901.
   Describes the physiographic and glacial features of the region.

2. Discovery of a mastodon's tooth and the remains of a boreal vegetation in a swamp on Staten Island, N. Y.

   N. Y. Acad. Sci., Annals, vol. 14, pt. 1, pp. 67–68, 1901.

3. Eocene Plantæ.

   Md. Geol. Surv., Eocene, pp. 258–261, 1 pl., 1901.

4. Geological and botanical notes, Cape Cod and Chappaquidick Island, Mass.

   N. Y. Bot. Garden, Bull., vol. 2, no. 7, pp. 381–407, 2 pls., 1 fig., 1902.
   Describes the general geologic and botanical features of these localities.

5. Fossil ferns from the Laramie group of Colorado.

   Torreya, vol. 2, pp. 145–148, 1902; N. Y. Bot. Garden, Contr., no. 28, pp. 145–148, 2 pls., 1902.

6. A fossil petal and a fossil fruit from the Cretaceous (Dakota group) of Kansas.

   Torrey Bot. Club, Bull., vol. 30, pp. 102–105, 2 figs., 1903; N. Y. Bot. Garden, Contr., no. 31, pp. 102–105, 1903.

7. Field work during 1901 in the Cretaceous beds of Long Island.

   N. Y. State Mus., 55th Ann. Rept., pp. r48–r51, 1903.
   Gives a list of Cretaceous fossil plants collected in the vicinity of Glencove on Long Island, New York.

8. Two additions to our list of drift fossils.

   Staten Island Nat. Sci. Assoc., Proc., vol. 8, p. 53, 1903.
   Notes occurrence of drift bowlders containing Devonian fossils.

9. Fossil plants from Kansas.

   N. Y. Bot. Garden, Jour., vol. 4, pp. 66–68, 4 figs., 1903.
   Gives a brief account of a collection of Cretaceous fossil leaves from Kansas.

10. Systematic paleontology of the Miocene deposits of Maryland: Angiospermæ.

    Md. Geol. Surv., Miocene, pp. 483–486, 1 fig., 1904.

Hollick (Arthur)—Continued.

11. Additions to the paleobotany of the Cretaceous formation on Long Island. No. II.

    N. Y. Bot. Garden, Bull., vol. 3, pp. 403–418, 10 pls., 1904.

12. Some recently discovered facts in regard to Silver Lake [Staten Island, New York].

    Staten Island Nat. Sci. Assoc., Proc., vol. 9, pp. 11–13, 1904.

    Gives records of borings at this locality, and notes upon the character of the material passed through.

13. Geological notes.

    Staten Island Nat. Sci. Assoc., Proc., vol. 9, p. 25, 1904.

    Gives notes upon the occurrence of a submerged peat bed near Staten Island, New York.

14. A recent discovery of amber and other fossil plant remains at Kreischerville [Staten Island, New York].

    Staten Island Nat. Sci. Assoc., Proc., vol. 9, pp. 31–32, 1904.

15. A canoe trip down the Yukon River from Dawson to Anvik [Alaska].

    Abstract: Science, new ser., vol. 19, p. 859, 1904; Am. Geol., vol. 33, p. 399, 1904.

    Gives observations upon the geology of the region traversed.

16. A recent discovery of amber on Staten Island.

    N. Y. Bot. Garden, Jour., vol. 6, pp. 45–48, 2 figs., 1905.

    Describes the occurrence of amber in Cretaceous strata on Staten Island, and discusses its origin.

17. The occurrence and origin of amber in the eastern United States.

    Am. Nat., vol. 39, pp. 137–145, 1905; N. Y. Bot. Garden, Contr., no. 64, 1905.

18. The preservation of plants by geologic processes.

    N. Y. Bot. Garden, Jour., vol. 6, pp. 115–118, 3 figs., 1905

19. Paleobotanical notes.

    N. Y. Bot. Garden, Jour., vol. 6, pp. 148–149, 1905.

20. Additional notes on the occurrence of amber at Kreischerville.

    Staten Island Nat. Sci. Assoc., Proc., vol. 9, pp. 35–36, 1905.

21. New York City folio, New York-New Jersey.

    See **Merrill** (F. J. H.), and others, 1.

Hollister (George B.).

1. Physiographic features of the Susquehanna basin.

   U. S. Geol. Surv., Water-Supply and Irrig. Paper no. 108, pp. 9–18, 1 pl., 1904.

   Describes physiographic features of the Susquehanna basin.

2. Hydrographic work of the U. S. Geological Survey.

   Intern. Geog. Cong., Eighth, Rept., pp. 515–522, 1905.

3. Waters of a gravel-filled valley near Tully, N. Y.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 179–184, 1 fig., 1905.

Holmes (J. A.).

1. Biennial report of the State geologist on the operations of the Geological Survey of North Carolina during the two years ending November 30, 1902.

   N. C. Geol. Surv., Bienn. Rept. State Geol., 1901-1902, 15 pp., 1902.

2. Biennial report of the State geologist on the operations of the North Carolina Geological Survey during the two years ending November 30, 1904.

   N. C. Geol. Surv., Bienn. Rept. State Geol., 1903–1904, 32 pp., 1905.

Holmes (W. H.).

1. Fossil human remains found near Lansing, Kansas.

   Am. Anthrop., new ser., vol. 4, pp. 743–752, 2 pls., 2 figs., 1902; Smith Inst., Ann. Rept. for 1902, pp. 455–462, 3 pls., 1903.

   Discusses the age of the deposits in which the human remains were found at Lansing, Kansas

Holway (Ruliff S.).

1. Eclogites in California.

Jour. Geol., vol. 12, pp. 344-358, 5 figs., 1904.

Reviews previous work upon eclogites (garnetiferous augite or hornblende), and describes the occurrence and petrographic characters of eclogites from localities in California and Oregon.

Hopkins (A. D.).

1. Work of the prehistoric scolytid, Phlœosinus squalidens Scudd.

Can. Geol. Surv., Cont. to Paleont., vol. 2, pt. 2, pp. 91-92, 2 pls., 1900.

Hopkins (Thomas C.).

1. Clays and clay industries of Pennsylvania. II. Clays of southeastern Pennsylvania (in part).

Pa. St. Coll., Ann. Rept., 1898-99, Appendix, 76 pp., 5 pls., 1 fig., [1900?].

Describes character and occurrence of clays and their products manufactured in the State.

2. A short discussion of the origin of the Coal Measure fire clays.

Am. Geol., vol. 28, pp. 47-51, 1901.

Reviews the evidences of the formation of fire clays in situ, and states that the occurrence of a considerable portion of them is better explained by considering them as transported clays reduced before deposition.

3. Graphite and garnet.

Mines & Minerals, vol. 21, p. 352, 1901.

Describes occurrence in Pennsylvania and other regions.

4. Clays and clay industries of Pennsylvania. III. Clays of the Great Valley and South Mountain areas.

Pa. St. Coll., Ann. Rept., 1899-1900, Appendix, 45 pp., [1901?].

Describes character and occurrence of clays and products manufactured from them.

5. Fireclays of the Coal Measures, a short discussion of their origin, and the causes of the qualities which render them more or less refractory.

Mines & Minerals, vol. 22, p. 296, 1902.

6. The Lower Carboniferous area in Indiana.

Abstract: Science, new ser., vol. 15, p. 83, 1902.

7. Glacial climate.

Onondaga Acad. Sci., Proc., vol. 1, pp. 74-81, 1903.

Discusses the causes assigned for the climate of Glacial times, especially the hypothesis of the variation in amount of carbon dioxide in the atmosphere.

8. Lower Carboniferous area in Indiana.

Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 519-521, 1903.

Describes briefly the Carboniferous formations of the region.

9. Mineral resources of Onondaga County, New York.

N. Y. State Mus., 56th Ann. Rept., pp. r109-r114, 1904.

Describes the occurrence and production of building stones, clays, and other economic resources.

10. The geological map of Indiana.

Ind., Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 11-14, 1904.

Describes the preparation of the geologic map of the State of Indiana (scale: 4 miles to the inch) accompanying the Twenty-eighth Annual Report of the Department of Geology and Natural Resources of Indiana.

11. A short description of the topography of Indiana and of the rocks of the different geological periods; to accompany the geological map of the State.

Ind., Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 15-77, 1904.

The part on the Ordovician and the Silurian (pp. 21-39) was written by A. F. Foerste.

12. Contents of the published volumes of reports of the Indiana Geological Survey, the Department of Geology and Natural History, and the Department of Geology and Natural Resources.

Ind., Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 487-495, 1904.

Hopkins (Thomas C.)—Continued.

13. General index to all the publications of the Indiana Geological Survey, the Department of Geology and Natural History, and the Department of Geology and Natural Resources.

Ind., Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 497-553, 1904.

16. Stratigraphic and economic geology of the Syracuse region [New York].

Abstract: Science, new ser., vol. 22, p. 334, 1905.

Hopkins (Thomas C.) and **Smallwood** (Martin).

1. On some anticlinal folds [Pennsylvania].

Abstract: Science, new ser., vol. 15, p. 89, 1902.

Hopkins (Thomas C.), **Smallwood** (W. M.) and.

1. A discussion of the origin of some anticlinal folds near Meadville, Pennsylvania.

See **Smallwood** (W. M.) and **Hopkins** (T. C.), 1.

Horton (Robert E.).

1. The drainage of ponds into drilled wells.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 30-39, 3 figs., 1905.

Hosea (R. M.).

1. Tercio and Cuatro mines. A description of the coal washing and coking plants of the Colorado Fuel & Iron Co. at Tercio and Cuatro [Colorado].

Mines & Minerals, vol. 25, pp. 218-223, 6 figs., 1904.
Includes observations on the general geology of the region.

Hotchkiss (W. O.).

1. An explanation of the phenomena seen in the Becke method of determining index of refraction.

Am. Geol., vol. 36, pp. 305-308, 1 fig., 1905.

Hovey (Edmund Otis).

1. The Geological Society of America. Thirtieth annual meeting.

Sci. Am. Suppl., vol. 51, pp. 20948-20950, 1901.
Contains abstracts of papers read.

2. Geology and geography at the Denver meeting of the American Association for the Advancement of Science.

Sci. Am. Suppl., vol. 52, pp. 21504-21505, 1901.

3. The Thirtieth Annual Meeting of the Geological Society of America.

Sci. Am., vol. 84, p. 19, 1901.
Contains brief abstract of some of the papers read.

4. [Abstracts of papers read before the thirtieth annual meeting of the Geological Society of America.]

Eng. & Mg. Jour., vol. 71, pp. 49-50, 1901.

5. Geology at the fiftieth meeting of the American Association for the Advancement of Science.

Eng. & Mg. Jour., vol. 72, pp. 297-298, 1901.
Contains abstracts of papers read.

6. Notes on the Triassic and Jurassic beds of the Black Hills of South Dakota and Wyoming.

Abstract: Science, new ser., vol. 15, p. 27, 1902.

7. The fourteenth annual meeting of the Geological Society of America.

Eng. & Mg. Jour., vol. 73, pp. 101-103, 1902.

8. The paleontological collections of the geological department of the American Museum of Natural History.

Jour. Geol., vol. 10, pp. 252-255, 1902.

9. Observations on the eruptions of 1902 of La Soufrière, St. Vincent, and Mt. Pelée, Martinique.

Am. Jour. Sci., 4th ser., vol. 14, pp. 319-358, 1 pl., 18 figs., 1902.

Hovey (Edmund Otis)—Continued.

10. The eruptions of La Soufrière, St. Vincent, in May, 1902.
    Nat. Geog. Mag., vol. 13, pp. 444–459, 4 figs., 1902.
    Describes the author's observations.

11. A visit to Martinique and St. Vincent after the great eruptions of May and June, 1902.
    Am. Mus. Jour., vol. 2, pp. 57–63, 3 pls., 1902.

12. Martinique and St. Vincent; a preliminary report upon the eruptions of 1902.
    Am. Mus. Nat. Hist., Bull., vol. 16, pp. 333–372, 19 pls. (incl. map), 1902.
    Describes the phenomena of these eruptions and the extent of the devastation.

13. Notes on the Triassic and Jurassic strata of the Black Hills of South Dakota and Wyoming.
    Abstract: N. Y. Acad. Sci., Ann., vol. 14, p. 152, 1902.

14. A remarkable slab of fossil crinoids [from the Cretaceous of Kansas].
    Am. Mus. Jour., vol. 2, pp. 11–14, 1 pl., 1902.

15. [Abstracts of papers on geology and geography read before Section E of the American Association for the Advancement of Science at the Washington meeting.]
    Science, new ser., vol. 17, pp. 217–229, 1903.

16. The annual meeting of the Geological Society of America, and geology and geography at the convention of the American Association for the Advancement of Science.
    Sci. Am. Suppl., vol. 55, pp. 22646–22648, 22665–22667, 1903.

17. The new cone of Mont Pelé and the gorge of the Rivière Blanche, Martinique.
    Am. Jour. Sci., 4th ser., vol. 16, pp. 269–281, 9 figs., 1903.

18. Martinique and St. Vincent revisited.
    Am. Mus. Jour., vol. 3, pp. 41–55, illus., 1903.
    Describes phenomena connected with the eruptions of Mont Pelé and La Soufrière.

19. 'Mount Pelee.'
    Science, new ser., vol. 17, p. 1010, 1903.
    Discusses the proper form of the name of this volcano.

20. Mont Pelé from May to October, 1903.
    Science, new ser., vol. 18, pp. 633–634, 1903.
    Describes changes in the spine of Mont Pelé.

21. The marvelous obelisk of Mont Pelé.
    Sci. Am., vol. 89, p. 407, illus., 1903; Sci. Am. Suppl., vol. 56, pp. 23354–23355, 1903.
    Describes the appearance, character, and formation of the "spine" and other volcanic phenomena.

22. The volcanoes of the Caribbean Islands. Appearance of Mont Pelé, Martinique, and La Soufrière, St. Vincent, one year after the great eruption.
    Sci. Am. Suppl., vol. 56, pp. 23011–23014, illus., 1903.

23. The inner cone of the Mont Pelée crater and its relation to the destruction of Morne Rouge.
    Abstract: Science, new ser., vol. 17, p. 226, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

24. Some erosion phenomena on Mont Pelée and Soufrière.
    Abstract: Science, new ser., vol. 17, p. 226, 1903; Sci. Am. Suppl., vol. 55 pp. 22647–22648, 1903.

25. The Geological Society of America.
    Eng. & Mg. Jour., vol. 77, pp. 73–74, 1904.
    Gives abstracts of papers read at the sixteenth annual meeting.

26. Mont Pelé from October 20, 1903, to May 20, 1904.
    Science, new ser., vol. 20, pp. 23–24, 1904.

27. The Soufrière of St. Vincent in July, 1904.
    Science, new ser., vol. 20, pp. 281–282, 1904.

Hovey (Edmund Otis)—Continued.

28. The Grand Soufrière of Guadeloupe.

Am. Geog. Soc., Bull., vol. 36, pp. 513-530, 10 figs., 1904. Abstract: Science, new ser., vol. 19, pp. 859-860, 1904.

Gives observations upon the geology of the island, and the physical features and volcanic activity of the Grande Soufrière.

29. New cone and obelisk of Mont Pelé.

Geol. Soc. Am., Bull., vol. 15, pp. 558-560, 2 pls., 1904.

30. Some erosion phenomena observed on the islands of Saint Vincent and Martinique in 1902 and 1903.

Geol. Soc. Am., Bull., vol. 15, pp. 560-561, 2 pls., 1904.

31. Grande Soufrière of Guadeloupe.

Geol. Soc. Am., Bull., vol. 15, p. 561, 1904.

Describes briefly the present condition of this volcano.

32. Bibliography of literature of the West Indian eruptions published in the United States.

Geol. Soc. Am., Bull., vol. 15, pp. 562-566, 1904.

33. The 1902-1903 eruptions of Mont Pelé, Martinique, and the Soufrière, St. Vincent.

Congr. géol. intern., Compte rendu IXᵉ sess., pp. 707-738, 11 pls. and 6 figs., 1904.

34. The Crystal Cave of South Dakota.

Sci. Am. Suppl., vol. 57, pp. 23657-23658, 4 figs., 1904.

35. Some erosion phenomena in St. Vincent and Martinique.

Abstract: Science, new ser., vol. 19, p. 892, 1904.

36. St. Vincent, British West Indies: the eruptions of 1902 and their immediate results.

Abstract: Science, new ser., vol. 20, pp. 604-605, 1904.

37. [Report of meeting of] Section E—Geology and Geography [of the American Association for the Advancement of Science, at Philadelphia, December 28, 1904].

Science, new ser., vol. 21, pp. 135-138, 1905.

Gives abstracts of some of the papers read.

38. The Geological Society of America.

Science, new ser., vol. 21, pp. 216-223, 1905.

Gives abstracts of papers read before the Geological Society of America at Philadelphia, December 29-31, 1904.

39. Geology and geography at the American Association for the Advancement of Science.

Sci. Am., vol. 92, p. 27, 1905.

Gives a brief account of the meeting and abstracts of some of the papers read.

40. Seventeenth annual meeting of the Geological Society of America.

Sci. Am. Suppl., vol. 59, pp. 24326-24327, 1905.

Gives abstracts of papers presented.

41. Geological progress.

Eng. & Mg. Jour., vol. 79, pp. 94-95, 1905.

Gives abstracts of papers read at the annual meeting of the Geological Society of America.

42. The Cape York meteorites.

Am. Mus. Jour., vol. 5, pp. 3-7, 1 pl., 1 fig., 1905.

Describes meteorites brought from Greenland.

43. The western Sierra Madre of the State of Chihuahua, Mexico.

Am. Geog. Soc., Bull., vol. 37, pp. 531-543, 6 figs., 1905.

Contains notes on the geology of the region.

44. Volcanoes of Martinique, Guadaloupe, and Saba.

Intern. Geog. Cong., Eighth, Rept., pp. 447-451, 1905.

Hovey (Edmund Otis)—Continued.

45. Volcanoes of St. Vincent, St. Kitts, and Statia.

Intern. Geog. Cong., Eighth, Rept., pp. 452-454, 1905.

46. The American Association for the Advancement of Science. Summer meeting of section C, geology and geography.

Science, new ser., vol. 22, pp. 333-336, 1905.

Contains notes on the geology of the vicinity of Syracuse, N. Y., and abstracts of papers presented to the meeting.

47. The western Sierra Madre of the State of Chihuahua [Mexico].

Abstract: Science, new ser., vol. 22, p. 336, 1905.

Hovey (Horace C.).

1. The lead and silver mines of Newbury [Massachusetts].

Sci. Am. Suppl., vol. 51, p. 21284, 1901.

Contains notes on the occurrence of the minerals and the geology of the region.

2. Colossal cavern (Kentucky).

Spelunca, t. 5, pp. 57-61 (247-251), 2 figs., 1904.

In the author's separates a copyright plate has been added showing route in the cave.

Howarth (O. H.).

1. Geological features of the Azores; interesting illustrations of peculiar volcanic effects, both past and present.

Mines & Minerals, vol. 23, pp. 385-388, 4 figs., 1903.

Howe (Ernest).

1. Experiments illustrating intrusion and erosion.

U. S. Geol. Surv., 21st Ann. Rept., pt. 3, pp. 291-303, 3 pls., 3 figs., 1901.

Describes experiments illustrating the formation of laccoliths and the deformation of the invaded strata.

2. Recent tuffs of the Soufrière, St. Vincent.

Amer. Jour. Sci., 4th ser., vol. 16, pp. 317-322, 1903.

Describes character and occurrence of deposits of volcanic ejecta.

3. An occurrence of greenstone schists in the San Juan Mountains, Colorado.

Jour. Geol., vol. 12, pp. 501-509, 1904.

Describes the occurrence and character of greenstone schists in the San Juan Mountains, discusses their age, and compares them with similar rocks from other localities.

4. Ore deposits of the Ouray district, Colorado. Geology.

U. S. Geol. Surv., Bull. no. 260, pp. 51-54, 1905.

Howe (E.), **Cross** (W.) and.

1. Silverton folio, Colorado. Geography and general geology of the quadrangle.

See **Cross** (W.) and **Howe** (E.), 1.

2. Red Beds of southwestern Colorado and their correlation.

See **Cross** (W.) and **Howe** (E.), 2.

3. Topography and general geology of the Needle Mountains quadrangle [Colorado].

See **Cross** (W.) and **Howe** (E.), 3.

4. The Red Beds of southwestern Colorado.

See **Cross** (W.) and **Howe** (E.), 4.

Howe (James Lewis), **Campbell** (H. D.) and.

1. A new (?) meteoric iron from Augusta Co., Virginia.

See **Campbell** (H. D.) and **Howe** (J. L.), 1.

Howley (James P.).

1. Report of geological exploration in the district of White Bay, N. F., during the season of 1902.

Newfoundland Geol. Surv. 28 pp., 1903.

Describes observations upon the geology of northern Newfoundland.

Howley (James P.)—Continued.

2. Report on exploration and boring operations in the central Carboniferous basin near Grand Lake [Newfoundland], 1904.
   Newfoundland Geol. Surv., St. Johns, Nfld., pp. 31–47, 1905.
   Contains notes on the occurrence of coal in Newfoundland.

Hrdlička (Aleš).

1. The crania of Trenton, New Jersey, and their bearing upon the antiquity of man in that region.
   Am. Mus. Nat. Hist., Bull., vol. 16, pp. 23–62, 22 pls., 3 tables, 1902.
   Describes the occurrence and character of the remains.
2. The Lansing skeleton.
   Am. Anthropologist, new ser., vol. 5, pp. 323–330, 1 fig., 1903.
   Gives a detailed description of the skeleton and its parts, and a comparison with that of the American Indian.

Hubbard (George D.).

1. An inter-Glacial valley in Illinois.
   Jour. Geol., vol. 12, pp. 152–160, 3 figs., 1904.
   Describes distribution of Illinoian and Wisconsin drift deposits in southern Illinois and various physiographic features of the Embarras Valley, and discusses its physiographic history.

Hubbard (Lucius L.)

1. Two new geological cross-sections of Keweenaw Point [Michigan].
   Lake Superior Mg. Inst., Proc., vol. 2, pp. 79–96 [1894?].
   Describes the geology of this area and gives a section of the strata.
2. The relation of the vein at the Central mine, Keweenaw Point, to the Kearsarge conglomerate [Michigan].
   Lake Superior Mg. Inst., Proc., vol. 3, pp. 74–83, 4 pls. [1895?].
3. Work of the Geological Survey in the Upper Peninsula [Michigan].
   Mich. Miner, vol. 3, no. 3, p. 9, 1901.

Hudson (Edward J.), **Mabery** (Charles H) and.

1. On the composition of California petroleum.
   See **Mabery** (C. F.) and **Hudson** (E. J.), 1.

Hudson (George H.).

1. Contributions to the fauna of the Chazy limestone on Valcour Island, Lake Champlain.
   N. Y. State Mus., Bull. 80, pp. 270–295, 5 pls. and 7 figs., 1905.

Hulst (Nelson P.).

1. The geology of that portion of the Menominee Range, east of the Menominee River [Michigan].
   Lake Superior Mg. Inst., Proc. for 1893, pp. 19–28, 2 figs., geol. map [1893?].
   Describes the geologic structure and occurrence of ores in this area.

Hunter (A. F.).

1. The Algonquin shore line in Simcoe County, Ontario.
   Can. Geol. Surv., Summ. Rept. for 1902, pp. 279–302, 1903.
2. Raised shore lines along the Blue Mountain escarpment [Ontario].
   Can. Geol. Surv., Summ., Rept. for 1904, pp. 225–228, 1905.

Huntington (Ellsworth) and **Goldthwait** (James Walter).

1. The Hurricane fault in southwestern Utah.
   Jour. Geol., vol. 11, pp. 46–63, 10 figs., 1903.
   Gives a table showing the succession of formations in the region, and describes physiographic features and its geologic history.
2. The Hurricane fault in the Toquerville district, Utah.
   Harvard Coll., Mus. Comp. Zool., Bull., vol. 42 (Geol. Ser., vol. 6), pp. 199–259, 7 pls., 13 figs., 1904.
   Describes geographic and physiographic features of the region, the character and occurrence of the geologic formations, the geologic history, embracing deposition, uplift, folding, faulting, erosion, and vulcanism, and the occurrence and effects of lava flows.

Hurley (Thomas Jefferson).

1. Famous gold nuggets of the world.

64 pp., illus., 1900. (Private publication.)

Hussakoff (L.).

1. Notes on the Devonian "placoderm," Dinichthys intermedius Newb.

Am. Mus. Nat. Hist., Bull., vol. 21. pp. 27-36, 1 pl. and 2 figs., 1905.

2. On the structure of two imperfectly known Dinichthyds.

Am. Mus. Nat. Hist., Bull., vol. 21, pp. 409-414, 2 pls., 2 figs., 1905.

Hyatt (Alpheus).

1. Pseudoceratites of the Cretaceous. Edited by T. W. Stanton.

U. S. Geol. Surv., Mon. vol. 44, 351 pp., 47 pls., 1903.

Discusses briefly structural details of Jurassic Ammonites, and gives systematic descriptions of genera and species of Cretaceous Pseudoceratites from North America and other parts of the world.

Hyatt (Alpheus) and **Smith** (James Perrin).

1. The Triassic cephalopod genera of America.

U. S. Geol. Surv., Professional Paper no. 40, 394 pp., 85 pp., 1 fig., 1905.

The systematic descriptions of orders, families, genera, and species are preceded by a synopsis of American Triassic stratigraphy, a discussion of the classification of Triassic ammonites and a table showing the occurrence of American Triassic cephalopod genera.

Hyde (Jesse E.).

1. Changes in the drainage near Lancaster [Ohio].

Ohio Naturalist, vol. 4, pp. 149-157, 4 figs., 1904.

Discusses changes in drainage produced by the ice invasions of the Glacial period.

I.

Iddings (Joseph Paxson).

1. Chemical composition of igneous rocks, expressed by means of diagrams, with reference to rock classification on a quantitative chemico-mineralogical basis.

U. S. Geol. Surv., Professional Paper no. 18, 98 pp., 8 pls. (diagrams), 1903.

Reviews the use of diagrams in representing the composition of igneous rocks, discusses the purpose and construction of the diagrams employed by the writer, gives a classified list of analyses used in constructing the diagrams, and a general discussion of igneous rocks as to occurrence, composition, correlation, and classification.

2. A fracture valley system.

Jour. Geol., vol. 12, pp. 94-105, 1 pl., 1904.

Discusses the relations subsisting between systems of drainage and fractures, and describes, in illustration, the drainage system and geologic structure of the Livingston quadrangle, folio 1 of the Geologic Atlas of the United States.

3. Quartz-feldspar-porphyry (graniphyro liparose-alaskose) from Llano, Texas.

Jour. Geol., vol. 12, pp. 225-231, 1904.

Describes petrographic characters and chemical composition, and discusses its position in the quantitative system of classification.

4. The isomorphism and thermal properties of the feldspars. Part II. Optical study. Lime-soda feldspars crystallized in open crucibles from fused constituents.

Carnegie Inst. of Wash., Publ. no. 31, pp. 77-95, 26 pls., 1 fig., 1905.

Iddings (Joseph P.), **Cross** (Whitman), **Pirsson** (Louis V.), and **Washington** (Henry S.).

1. A quantitative chemico-mineralogical classification and nomenclature of igneous rocks.

See **Cross** (Whitman) and others, 1.

2. Quantitative classification of igneous rocks.

See **Cross** (Whitman) and others, 2.

Ihlseng (Magnus C.).

1. The road-making materials of Pennsylvania.

   Pa. Dept. Agric., Bull. no. 69, 104 pp., illus., 1900.

   Includes notes on the composition and occurrence of rocks suitable for road-making materials.

Ingall (Elfric Drew).

1. Section of mineral statistics and mines, Annual report for 1898.

   Can. Geol. Surv., Ann. Rept., vol. 11, Part S, 192 pp., 1900.

   Contains statistics of production and notes on the coal fields of Nova Scotia, Manitoba, Northwestern Territories and British Columbia, and on the occurrence of natural gas and oil in Ontario.

2. Section of mineral statistics and mines, Annual report for 1899.

   Can. Geol. Surv., Ann. Rept., vol. 12, Part S, 144, pp., 1901.

3. Section of mines, Annual report for 1900.

   Can. Geol. Surv., Ann. Rept., vol. 13, Part S, 160 pp., 1902.

4. Report on the iron ore deposits along the Kingston and Pembroke Railway in eastern Ontario.

   Can. Geol. Surv., Ann. Rept. new ser., vol. 12, pp. 1I-911, 13 pls., 1902.

   Gives a summary of the geology and petrology of the area and describes the character and occurrence ot the iron ores.

5. Section of mines, Annual report for 1901.

   Can. Geol. Surv., Ann. Rept., vol. 14, Part S, 160 pp., 1902.

6. Geology of the Bruce Mines district [Ontario].

   Can. Geol. Surv., Summ. Rept. for 1902, pp. 242-252, 1903.

   Describes the character and occurrence of rocks, the occurrence of copper and iron ore deposits, and the mining operations.

7. Section of mines, Annual report for 1902.

   Can. Geol. Surv., Ann. Rept., vol. 15, Part S, 280 pp., 1904.

8. Bruce Mines district [Ontario].

   Can. Geol. Surv., Summ. Rept. for 1903, pp. 195-196, 1904.

   Includes brief notes on the geology of the district.

9. Section of mines, Annual report for 1903.

   Can. Geol. Surv., Ann. Rept., vol. 16, Part S, 156 pp., 1905.

Ingall (E. D.) and **Denis** (Theo.).

1. Geology of the country around Bruce Mines [Ontario].

   Can. Geol. Surv., Summ. Rept. for 1904, pp. 179-190, 1 pl., 1905.

   Describes the occurrence and relations of igneous and sedimentary rocks in this region.

Irving (John Duer).

1. Some recently exploited deposits of wolframite in the Black Hills of South Dakota.

   Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 683-695, 1 fig. (small geol. map), 1902.

   Describes the general geology and occurrence of wolframite in the ore-bearing veins of the region.

2. Ore deposits of the northern Black Hills.

   Mg. & Sci. Press, vol. 87, pp. 166-167, 187-188, 205, 221-222, 1903.

   Describes the general geology of the region and the character and geologic occurrence of the gold ore deposits.

3. The ore deposits of the northern Black Hills.

   Mg. Rep., vol. 50, pp. 430-431, 1904.

   Describes the general geology and the occurrence, geologic relations, and character of the gold, silver, tin, and wolframite ore deposits.

4. Ore deposits of the northern Black Hills.

   U. S. Geol. Surv., Bull. no. 225, pp. 123-140, 1904. Am. Mg. Cong., 6th Ann. Sess., Rept. of Proc., pp. 38-51, 1904.

   Describes the general geology and the character and occurrence of ore deposits, chiefly gold, lead-silver, and wolframite, in Algonkian, Cambrian, Carboniferous, and eruptive rocks.

Irving (John Duer)—Continued.

5. Microscopic structure and origin of certain stylolitic structures in limestone.

Abstract: Am. Geol., vol 33, pp. 266-267, 1904; Science, new ser., vol. 19, p. 580, 1904.
Discusses the character and origin of stylolites.

6. Ore deposits of the Ouray district, Colorado.

U. S. Geol. Surv., Bull. no. 260, pp. 50-77, 4 figs., 1905.
Describes the general geology, and the occurrence, relations, and economic development of gold and silver-bearing deposits.

7. Ore deposits in the vicinity of Lake City, Colorado.

U. S. Geol. Surv., Bull. no. 260, pp. 78-84, 1905.
Describes the general geology, and the occurrence, character, and relations of the gold and silver-bearing fissure veins.

8. University training of engineers in economic geology.

Econ. Geol., vol. 1, pp. 77-82, 1905.

9. The ore deposits of the Ouray quadrangle [Colorado].

Abstract: Science, new ser., vol. 21, pp. 916-917, 1905.

Irving (John Duer) and **Emmons** (S. F.).

1. Economic resources of the northern Black Hills. Part II. Mining geology.

U. S. Geol. Surv., Professional Paper no. 26, pp. 43-222, 19 pls., 11 figs., 1904.
Describes the character, occurrence, and geologic relations of the gold, silver, copper, tin and tungsten ores, and their economic development.

Irving (J. D.) and **Emmons** (W. H.).

1. Economic geology of the Needle Mountains quadrangle [Colorado].

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 131, 1905.
Describes the character, occurrence, and relations of the gold and silver ores.

Ishikawa (S.).

1. Latest eruption of Colima volcano, Mexico. [In Japanese.]

Tokyo Geol. Soc., Jour., vol. 11, pp. 98-108, 1904.

J.

Jackson (J. F.).

1. Copper mining in Upper Michigan, a description of the region, the mines, and some of the methods and machinery used.

Mines & Minerals, vol. 23, pp. 535-540, 9 figs., 1903.
Contains observations on the occurrence of the copper-ore deposits.

Jackson (Robert T.).

1. Charles Emerson Beecher.

Am. Nat., vol. 38, pp. 407-426, 1 pl. (por.), 1904.
Gives an account of his life and work, and a list of his published papers.

Jacobs (E.).

1. Ore quarrying in the Boundary district of British Columbia.

Eng. Mag., vol. 26, pp. 236-249, illus., 1903.
Describes briefly the occurrence and character of copper-ore deposits.

2. The coal fields of Crow's Nest Pass, British Columbia.

Eng. Mag., vol. 27, pp. 36-57, illus., 1904.
Describes the location of the field, the occurrence of the coal, and the mining operations.

Jaekel (O.).

1. Bemerkungen über den Beinbau der Trilobiten.

Zeitsch. d. deutsch. geol. Gesell., Bd. 54, pp. 53-55 (of Brief. Mitt.), 1902.
Discusses criticisms by C. E. Beecher of a paper by the author on the structure of trilobites.

Jaggar (Thomas Augustus).

1. The laccoliths of the Black Hills [South Dakota].

U. S. Geol. Surv., 21st Ann. Rept., pt. 3, pp. 163-290, 24 pls., 40 figs., 1901.
Describes the occurrence of the sedimentary and igneous rocks, and the character, occurrence, and distribution of the laccolithic intrusives, and discusses the physiographic form of eroded domes.

Jaggar (Thomas Augustus)—Continued.

2. Field notes of a geologist in Martinique and St. Vincent.
   Pop. Sci. Mo., vol. 61, pp. 352–368, 19 figs., 1902.
   Describes recent volcanic phenomena.
3. The next eruption of Pelée.
   Science, new ser., vol. 16, pp. 871–872, 1902.
4. Professor Heilprin on Mont Pelée.
   Science, new ser., vol. 17, pp. 423–425, 1903.
   Reviews the "Mont Pelée and the tragedy of Martinique" of Angelo Heilprin, and discusses phenomena connected with the eruptions.
5. Economic resources of the northern Black Hills. Part I. General geology.
   U. S. Geol. Surv., Professional Paper no. 26, pp. 13–41, 1 pl., 5 figs., 1904.
   Describes topography, stratigraphy, lithology, geologic structure, and characteristic sections.
6. The eruption of Mount Pelée, 1851.
   Am. Nat., vol. 38, pp. 51–73, 1904.
   Translated from the French of LePrieur, Peyraud, and Rufz.
7. The initial stages of the spine on Pelée.
   Am. Jour. Sci., 4th ser., vol. 17, pp. 34–40, 3 figs., 1904.
   Describes occurrence and appearance of spines in the crater of Mont Pelée and gives an explanation of their origin.
8. The eruption of Pelée, July 9, 1902.
   Pop. Sci. Monthly, vol. 64, pp. 219–231, 3 figs., 1904.
   Gives details of observations on the eruption of July 9, 1902, and discusses the causes of the phenomena.

Jaggar (T. A., jr.) and **Palache** (Charles).

1. Bradshaw Mountains folio, Arizona.
   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 126, 1905.
   Describes the occurrence, character, and relations of Algonkian sedimentary and metamorphic strata, of igneous rocks, and of Quaternary deposits, the geologic history, and the economic resources, including gold, silver, and copper deposits.

James (F. Wilton).

1. Notes on the Minnewaska region, Ulster Co., New York.
   Abstract: Am. Geol., vol. 35, pp. 257–258, 1905; Science, new ser., vol. 21, pp. 510–511, 1905.
   Gives notes upon physiographic features of the region.

Jamieson (George S.).

1. On the natural iron-nickel alloy, awaruite.
   Am. Jour. Sci., 4th ser., vol. 19, pp. 413–415, 1905.
   Describes character and composition of specimens of natural iron-nickel alloy obtained from Josephine County, Oregon, and from Del Norte County, California.

Jamieson (G. S.), **Penfield** (S. L.) and.

1. On tychite, a new mineral from Borax Lake, California, and on its artificial production and its relation to northupite.
   See **Penfield** (S. L.) and **Jamieson** (G. S.), 1.

Jefferson (Mark S. W.).

1. Limiting widths of meander belts.
   Nat. Geog. Mag., vol. 13, pp. 373–384, 6 figs., 1902.
   Describes methods and results of meander studies.
2. Mount Pelee.
   Science, new ser., vol. 17, p. 909, 1903.
   Discusses the proper writing of the name of this volcano.
3. Some shore features of Lake Huron.
   Abstract: Science, new ser., vol. 17, p. 221, 1903; Sci. Am. Suppl., vol. 55, p. 22647, 1903.

Jeffrey (Edward C.).

1. A fossil Sequoia from the Sierra Nevada.
   Bot. Gaz., vol. 38, pp. 321–332, 1904.

Jenney (Walter P.).

1. The mineral crest.

   Eng. and Mg. Jour., vol. 73, pp. 825-826, 1902.

   Discusses the occurrence of ore bodies in depth in limestone beneath large masses of barren rock.

2. The mineral crest, or the hydrostatic level attained by the ore-depositing solutions, in certain mining districts of the Great Salt Lake Basin.

   Mg. & Sci. Press, vol. 85, p. 297, 1902.

3. The mineral crest, or the hydrostatic level attained by the ore-depositing solutions, in certain mining districts of the Great Salt Lake Basin.

   Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 46-50, 1903.

4. The chemistry of ore-deposition.

   Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 445-498, 1903. Abstract: Mg. & Sci. Press, vol. 86, pp. 317-318, 1903.

   Discusses the action of carbon and hydrocarbons in the formation of ore deposits.

Jennings (E. P.).

1. The copper deposits of the Kaibab Plateau, Arizona.

   Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 839-841, 1904.

   Describes the general geology and occurrence of the ore deposits, containing copper chiefly

2. Origin of the magnetic iron ores of Iron County, Utah.

   Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 338-342, 2 figs., 1905.

   Describes the occurrence and character of the magnetic iron-ore deposits and discusses their origin.

Jennings (O. E.).

1. Notes on the vegetable tissues in Daemonelix.

   Carnegie Mus., Mem., vol. 2, pp. 190-191, 1905.

Jennison (W. F.).

1. Notes on the history of manganese mining in part of Nova Scotia and on some of the geological conditions of the manganese belt running through Hants County.

   Nova Scotia Mg. Soc., Jour., vol. 8, pp. 106-109, 1904.

   Discusses the occurrence and geological relations of the manganese ore deposits.

Jewett (J. J.).

1. Notes on the topography and geology of New Mexico.

   Kans. Acad. Sci., Trans., vol. 19, pp. 141-149, 1905.

Johnson (Charles W.).

1. Description of two new Tertiary fossils.

   Nautilus, vol. 17, pp. 143-144, 2 figs., 1904.

2. Annotated list of the types of invertebrate Cretaceous fossils in the collection of the Academy of Natural Science, Philadelphia.

   Phila. Acad. Nat. Sci., Proc., vol. 57, pp. 4-28, 1905.

Johnson (C. W.) and **Grabau** (A. W.).

1. A new species of Clavilithes from the Eocene of Texas.

   Phila. Acad. Nat. Sci., Proc., vol. 53, pp. 602-603, 2 figs., 1902.

Johnson (Douglas Wilson).

1. Notes on the geology of the saline basins of central New Mexico.

   Abstract: N. Y. Acad. Sci., Annals, vol. 14, pp. 161-162, 1902.

2. Notes of a geological reconnaissance in eastern Valencia County, New Mexico.

   Am. Geol., vol. 29, pp. 80-87, 2 pls., 1902.

   Describes the general physiographic and geologic features of the region.

3. On some Jurassic fossils from Durango, Mexico.

   Am. Geol., vol. 30, pp. 370-372, 1902; Columbia Univ., Geol. Dept., Contr., vol. 10, no. 88, 1902.

   Gives a brief description of material collected by E. F. Tuttle.

Johnson (Douglas Wilson)—Continued.

4. Geology of the Cerrillos Hills, New Mexico. Part I. General geology.

School of Mines Quart., vol. 24, pp. 303–350, 7 pls., 7 figs.; pp. 456–500, 10 pls., 6 figs., 1903.

Describes the geographic and physiographic features, reviews previous geologic work upon the district, gives a detailed account of the stratigraphy, mainly Cretaceous and Tertiary, areal geology and intrusive rocks, discusses the physiographic and general geologic history, and describes the character, occurrence, and production of coal and turquoise.

5. The geology of the Cerrillos Hills, New Mexico. Part II. Paleontology.

School of Mines Quart., vol. 24, pp. 173–246, 14 pls., 1903.

Gives a brief description of the geologic formations and faunal lists by localities, and systematic descriptions of the fossils collected.

6. The geology of the Cerrillos Hills, New Mexico. Part III. Petrography.

School of Mines Quart., vol. 25, pp. 69–98, 5 pls., 1903.

Describes the occurrence and characters, megascopic and microscopic, of the igneous rocks of this region.

7. Block mountains in New Mexico.

Am. Geol., vol. 31, pp. 135–139, 1 pl., 1903; Columbia Univ., Contr. from Geol. Dept., vol. 11, no. 93, 1903.

Gives observations on faulting in the block mountains of New Mexico.

8. The distribution of fresh-water faunas as an evidence of drainage modifications.

Science, new ser., vol. 21, pp. 588–592, 1905.

9. The Tertiary history of the Tennessee River.

Jour. Geol., vol. 13, pp. 194–231, 9 figs., 1905.

10. The scope of applied geology and its place in the technical school.

Econ. Geol., vol. 1, pp. 243–256, 1905.

11. Youth, maturity, and old age of topographic forms.

Am. Geog. Soc., Bull., vol. 37, pp. 648–653, 3 figs., 1905.

Johnson (J. E., jr.).

1. Origin of the Oriskany limonites [Virginia].

Eng. & Mg. Jour., vol. 76, pp. 231-232, 1903.

Describes the general geologic structure of the region and the occurrence and origin of the iron ores.

Johnson (L. C.).

1. Underground waters of eastern United States: Mississippi.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 171-178, 1 fig., 1905.

Describes briefly the geologic formations of the state and their underground water supplies.

Johnson (L. C.) and **Eckel** (E. C.).

1. Notes on wells, springs, and general water resources of Mississippi.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 332-357, 1904.

Johnson (Willard D.).

1. The high plains and their utilization.

U. S. Geol. Surv., 21st Ann. Rept., pt. 4, pp. 601-741, 44 pls., 29 figs., 1901. Abstract: Jour. Geol., vol. 9, pp. 734-737, 1901.

Discusses the origin and structure of the region.

2. The high plains and their utilization. (Conclusion of paper in Twenty-first Annual Report, Part IV.)

U. S. Geol. Surv., 22d Ann. Rept., pt. 4, pp. 631-669, 11 pls., figs. 236-244, 1902.

Discusses the origin and structure of the region, and its water resources, especially the ground water as a possible source of supply.

3. The profile of maturity in Alpine glacial erosion.

Jour. Geol., vol. 12, pp. 569–578, 1904.

Discusses physiographic characteristics due to glacial erosion of the Sierra Nevada Mountains, and the agencies by which they were produced.

4. The grade profile in Alpine glacial erosion.

Sierra Club Bull., vol. 5, pp. 271-278, 4 pls., 1905.

Reprinted with changes by the author, from the Journal of Geology, vol. 12, pp. 569–578, 1904. [See no. 3 above].

Johnson (William H.).

1. The lead and zinc fields of the Ozark uplift.

   Am. Bur. Geog., Bull., vol. 2, pp. 59–73, illus., 1901.

   Gives a general account of the development of the Missouri-Arkansas-Kansas lead and zinc mining district, and discusses briefly the general geology and the formation and character of the ores.

Johnston (J. F. E.).

1. Eastern part of the Abitibi region.

   Can. Geol. Surv., Summ. Rept. for 1901, pp. 128–141. 1902.

   Describes the author's observations in this region.

2. Geology of part of the County of Ottawa [Quebec].

   Can. Geol. Surv., Summ. Rept. for 1904, pp. 239–250, 1905.

Johnston (R. A. A.).

1. Bulletin on molybdenum and tungsten.

   Can. Geol. Surv., Min. Res. of Can., Bull. on Molybdenum and Tungsten, 16 pp., 1904.

   Describes characters, uses, etc., of molybdenum and tungsten, and gives a list of their occurrences in Canada.

2. The copper claims of Aspen Grove and Aberdeen Camp, B. C.

   Can. Geol. Surv., Summ. Rept. for 1904, pp. 74–80, 1905.

3. On the meteorite which fell near the village of Shelburne, township of Melancthon, Ontario, in August, 1904.

   Can. Geol. Surv., Summ. Rept. for 1904, pp. 332–336, 1905.

Joly (Henri).

1. Notice sur le Dr. Professor Charles Othoniel Marsh (29 octobre 1831–18 mars 1899).

   Angers, Bull de la Soc. d'Étud. Sci., new ser., vol. 30, pp. 114–117, 1901.

Joly (J.).

1. An estimate of the geological age of the earth.

   Smith Inst., Ann. Rept. 1899, pp. 247–288, 1901.

Jonas (Anna I.).

1. Serpentines in the neighborhood of Philadelphia.

   Am. Geol., vol. 36, pp. 296–304, 1905.

   Reviews the occurrence and origin of known serpentines and describes more particularly the serpentine dikes in the neighborhood of Philadelphia, Pa.

Jones (Alfred W.).

1. Further studies in the Mentor beds [Kansas].

   Kans. Acad. Sci., Trans., vol. 18, pp. 104–105, 1903.

2. The fauna of the Mentor.

   Kans. Acad. Sci., Trans., vol. 19, p. 122, 1905.

   A list of the marine fossils found in the Mentor beds of the Kansas Carboniferous.

Jones (Fayette Alexander).

1. New Mexico mines and minerals. World's Fair edition, 1904.

   Santa Fe, N. M., The New Mexican Printing Company, 1904. 349 pp., 50 figs.

   Includes a brief account of the general geology, and observations on the occurrence, geologic relations, and character of various ore deposits, mining and production of metals, etc. Gives a list of minerals occurring in New Mexico.

Jones (F. O.).

1. The formation and geology of the salt deposits.

   Sci. Am., vol. 87, p. 59, 3 figs., 1902.

   Describes the formation and occurrence of deposits of salt.

Jones (S. P.).

1. The geology of the Tallulah Gorge [Georgia].

   Am. Geol., vol. 27, pp. 67–75, 3 pls., 3 figs., 1901.

   Describes the physiographic features of the region and the origin of the gorge.

Jones (T. Rupert).

1. Notes on Dr. G. F. Matthew's Cambrian Ostracoda from northeastern America.

   Geol. Mag., new ser., dec. 4, vol. 9, pp. 401-403, 6 figs., 1902.

2. On some Isochilinæ from Canada and elsewhere in North America.

   Geol. Mag., new ser., dec. 4, vol. 10, pp. 300-304, 3 figs., 1903.

   Includes a catalogue of the known Isochilinæ, giving geologic occurrence and citation to description.

3. Note on a Paleozoic Cypridina from Canada.

   Geol. Mag., new ser., dec. 5, vol. 1, pp. 438-439, 1 fig., 1904.

   Describes a new species under the name Cypridina antiqua.

4. Some Paleozoic ostracods from Maryland.

   Johns Hopkins Univ., Circ., 1905, no. 3, pp. 30-33, 7 figs., 1905.

Julien (Alexis A.).

1. A study of the structure of fulgurites.

   Jour. Geol., vol. 9, pp. 673-693, 3 figs., 1901.

   Gives the results of the study of four fulgurites.

2. Erosion by flying sand of the beaches of Cape Cod.

   Abstract: N. Y. Acad. Sci., Annals, vol. 14, p. 125, 1901.

3. The geology of central Cape Cod [Massachusetts].

   Abstract: Am. Geol., vol. 27, p. 44, 1901.

   Contains notes on the glacial phenomena of the region.

4. [Discussion of paper by J. F. Kemp on "The Cambro-Ordovician outlier at Wellstown, Hamilton County, New York."]

   Science, new ser., vol. 13, p. 710, 1901.

   Discusses the origin of the sand in the limestone.

5. On pyrite and marcasite.

   Science, new ser., vol. 15, pp. 870-872, 1902.

6. Erosion by flying sand on the beaches of Cape Cod.

   Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 152-153, 1902.

7. Genesis of the amphibole schists and serpentines of Manhattan Island, New York.

   Geol. Soc. Am., Bull., vol. 14, pp. 421-494, 3 pls., 9 figs., 1903.

   Describes the character, occurrence, and origin of these rocks and their metamorphic phases and contact alterations.

8. The occlusion of igneous rock within metamorphic schists.

   Abstract: Am. Geol., vol. 33, p. 268, 1904; Science, new ser., vol. 19, p. 581, 1904.

   Defines the term "occlusion" and discusses some of the phenomena of occluded igneous rocks.

9. Determination of brucite as a rock constituent.

   Abstract: Am. Geol., vol. 35, pp. 258-259, 1905; Science, new ser., vol. 21, p. 511, 1905.

   Describes the characters of brucite by which it may be recognized in rocks.

K.

Kain (Samuel W.).

1. Recent earthquakes in New Brunswick.

   New Brunswick Nat. Hist. Soc., Bull., vol. 5, pp. 243-245, 1904.

Kay (George F.).

1. The Abitibi region [Ontario].

   Ontario Bur. Mines, Rept., 1904, pt. 1, pp. 104-121, 4 pls., 1904.

   Includes observations upon the geology, topography, drainage, etc., of the region traversed, and a discussion of the petrography.

Keele (Joseph).

1. The Duncan Creek mining district [Yukon].

   Can. Geol. Surv., Summ. Rept. for 1904, pp. 18-42, 1 map, 1905.

   Includes observations on the general geology and the occurrence of placer gold.

Keeley (Frank J.).

1. Inclusions in quartz.

Phila. Acad. Nat. Sci., Proc., vol. 55, p. 700, 1904.

Keith (Arthur).

1. Maynardville folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 75, 1901.

Describes the geographic features, the stratigraphy, the character and occurrence of the Cambrian, Silurian, Devonian, and Carboniferous rocks, the geologic structure, and the mineral resources of the region.

2. Folded faults in the southern Appalachian.

Abstract: Science, new ser., vol. 15, pp. 822–823, 1902.

3. Topography and geology of the southern Appalachians.

Message from the President of the United States, transmitting a report of the Secretary of Agriculture in relation to the forests, rivers, and mountains of the southern Appalachian region (Senate Doc. no. 84, 57th Cong., 1st sess.), pp. 111–123, 11 pls., 1902.

Contains a brief account of the general geology of the region.

4. Cranberry folio, North Carolina-Tennessee.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 90, 1903.

Describes geographic and topographic features, general geologic relations and structure, character and occurrence of Archean, Algonkian, Cambrian, and Juratrias (?) rocks, and mineral resources.

5. Iron-ore deposits of the Cranberry district, North Carolina-Tennessee.

U. S. Geol. Surv., Bull. no. 213, pp. 243–246, 1903.

Describes the character and occurrence of the iron ores of this region.

6. Tennessee marbles.

U. S. Geol. Surv., Bull. no. 213, pp. 366–370, 1903.

Describes the occurrence and character of marble deposits in eastern Tennessee, and locations suitable for quarrying.

7. Talc deposits of North Carolina.

U. S. Geol. Surv., Bull. no. 213, pp. 433–438, 1903.

Describes character, occurrence, and methods of mining the talc deposits.

8. Recent zinc mining in east Tennessee.

U. S. Geol. Surv., Bull. no. 225, pp. 208–213, 1904.

Describes the general geology, character, occurrence, and origin of the zinc-ore deposits.

9. Asheville folio, North Carolina-Tennessee.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 116, 1904.

Describes the geographic relations and drainage, the geologic history, the character, occurrence, and relations of Archean, Algonkian (?), Cambrian, and Ordovician rocks, the geologic structure, and the mineral resources of the area.

10. Folded faults of the southern Appalachians.

Congr. géol. intern., Compte rendu, IX. Sess., pp. 541–545, 1904.

Discusses the character and occurrence of overthrust faulting in the southern Appalachian region.

11. Greeneville folio, Tennessee-North Carolina.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 118, 1895.

Describes the general relations of the Greeneville quadrangle, its detailed geography, the general geological structure and history of the area, the character, occurrence, and relations of Archean, Cambrian, Ordovician, Silurian, and Carboniferous rocks, and the mineral resources.

12. Mount Mitchell folio, North Carolina-Tennessee.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 124, 1905.

Describes the geography, physiographic features, the general geology, the occurrence, character, and relations of Archean, Cambrian, and Triassic (?) rocks, the geologic structure, and economic resources.

13. Economic geology of the Bingham mining district, Utah. Part I. Areal geology.

U. S. Geol. Surv., Professional Paper no 38, pp. 27–70, 15 pls., 1905.

Describes the geography, topography, the character, occurrence, and relations of Carboniferous strata and of igneous rocks, and the geologic structure of the region.

Keith (Arthur), **Darton** (N. H.) and.

1. Washington folio, District of Columbia-Maryland-Virginia.

See **Darton** (N. H) and **Keith** (Arthur), 1.

Kemp (James Furman).

1. The Albany meeting of the Geological Society of America.

Science, new ser., vol. 13, pp. 95-100, 133-139, 1901.
Contains abstracts of papers presented.

2. The Cambro-Ordovician outlier at Wellstown, Hamilton County, New York.

Abstract: Science, new ser., vol. 13, p. 710, 1901.
Contains brief description of occurrence of small outliers of Paleozoic strata within the crystalline area of the region.

3. New asbestos region in northern Vermont.

Abstract: Science, new ser., vol. 14, pp. 773-774, 1901; N. Y. Acad. Sci., Annals, vol. 14, p. 140, 1901.
Describes the occurrence of asbestos associated with serpentine.

4. Physiography of Lake George.

Abstract: Science, new ser., vol. 14, p. 774, 1901; N. Y. Acad. Sci., Annals, vol. 14, pp. 141-142, 1901.
Describes briefly the physiographic history of the region.

5. Calculation of rock analyses.

School of Mines Quart., vol. 22, p. 75, 1901. Abstract: Am. Nat., vol. 35, p. 947, 1901.

6. New asbestos region in northern Vermont.

Abstract: Am. Geol., vol. 28, p. 330, 1901.
Abstract of paper read before the N. Y. Academy of Sciences.

7. Physiography of Lake George, New York.

Abstract: Am. Geol., vol. 28, pp. 331-332, 1901.
Abstract of paper read before the N. Y. Academy of Sciences.

8. Notes on the occurrence of asbestos in Lamoille and Orleans counties, Vermont.

U. S. Geol. Surv., Min. Res. of U. S. for 1900, pp. 862-866, 1901.

9. The rôle of the igneous rocks in the formation of veins.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 169-198, 1902.
Discusses mode of occurrence and formation of ores in igneous, sedimentary, and metamorphic rocks; and the occurrence of groundwater and the part which it plays in the localization of ore deposits.

10. The deposits of copper-ores at Ducktown, Tennessee.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 244-265, 12 figs., 1902.
Describes briefly topography of Ducktown, mode of occurrence and character of the ore and associated minerals, and possible origin of the ore bodies.

11. The geological relations and distribution of platinum and associated metals.

U. S. Geol. Surv., Bull. no. 193, 95 pp., 6 pls., 8 figs., 1902; Columbia Univ., Geol. Dept., Contr., vol. 10, no. 81, 1902.

12. Igneous rocks and circulating waters as factors in ore deposition.

Columbia Univ., Geol. Dept., Contr., vol. 10, no. 86, 1902.

13. The Cambro-Ordovician outlier at Wellstown, Hamilton County, New York.

Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 113-115, 1902.

14. A new asbestos region in northern Vermont.

Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 140-141, 1902.

15. Notes on the physiography of Lake George.

Abstract: N. Y. Acad. Sci., Ann., vol. 14 pp. 141-142, 1902.

16. Theodore G. White (Obituary).

Abstract: N. Y. Acad. Sci., Ann., vol 14, pp. 148-149, 1902.

17. The anthracite situation and problem.

Eng. Co. Am., Bull. no. 1, 22 pp., 1903.
Contains a brief account of the character and occurrence of anthracite and the geologic structure of the anthracite fields of Pennsylvania.

Kemp (James Furman)—Continued.

18. Memoir of Theodore Greely White.

Geol. Soc. Am., Bull., vol. 13, pp. 516–517, 1903.
Includes a list of publications.

19. Igneous rocks and circulating waters as factors in ore-deposition.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 699–714, 1903.

20. Platinum in the Rambler mine, Wyoming.

Columbia Univ., Geol. Dept., Contr., vol. 11, no. 93, 7 pp., 1 pl., 1 fig., 1903; U. S. Geol. Surv., Min. Res. for 1902, pp. 244–250, 1 pl., 1904.
Describes the general geology of the vicinity of the mine and the occurrence of the platinum-bearing ores.

21. A new spheroidal granite.

Science, new ser., vol. 18, pp. 503–504, 1903; Columbia Univ., Geol. Dept., Contr., vol. 11, no. 93, 1903.
Describes character and occurrence of spheroidal granite in a bowlder found near Charlevoix, Michigan.

22. On the differentiation of igneous magmas and the formation of ores.

Eng. & Mg. Jour., vol. 76, pp. 804–805, 1903.

23. Comments on the geology of Bingham Canyon, Utah.

Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 76–77, 1903.

24. The leucite hills of Wyoming.

Abstract: Science, new ser., vol. 17, p. 505, 1903.

25. Genetic classification of ore deposits.

Abstract: Science, new ser., vol. 17, p. 542, 1903.

26. Ores from igneous magmas.

Eng. & Mg. Jour., vol. 77, p. 675, 1904.

27. Graphite in the eastern Adirondacks, N. Y.

U. S. Geol. Surv., Bull. no. 225, pp. 512–514, 1904.
Describes occurrence and character of deposits of graphite.

28. The formation of veins: a brief statement of general principles.

Mg. Mag., vol. 10, pp. 89–93, 1904.
Discusses the general principles of ore deposition.

29. A handbook of rocks for use without the microscope. With a glossary of the names of rocks and of other lithological terms. Third edition, revised.

New York, D. Van Nostrand Company, 1904. 238 pp., 41 figs.

30. Geological bookkeeping.

Geol. Soc. Am., Bull., vol. 16, pp. 411–418, 2 figs., 1905.
Describes methods of recording field observations to facilitate easy reference thereto.

31. Die Lagerstätten titanhaltigen Eisenerzes im Laramie Range, Wyoming, Ver. Staaten.

Zeitschr. f. prak. Geol., Jahrg. 13, pp. 71–80, 7 figs., 1902.
Describes the occurrence, character, and geological relations of titaniferous magnetite deposits in Wyoming.

32. The copper deposits at San Jose, Tamaulipas, Mexico.

Am. Inst. Mg. Engrs., Bi-mo. Bull. no. 4, pp. 885–912, 3 figs., 1905.
Describes the general geology and the occurrence, character, relations, and composition of eruptive rocks, and discusses the origin of their component minerals, and of the ores.

33. Secondary enrichment in ore deposits of copper.

Econ. Geol., vol. 1, pp. 11–25, 1905.

34. What is a fissure vein?

Econ. Geol., vol. 1, pp. 167–169, 1905.

35. The problem of the metalliferous veins.

Econ. Geol., vol. 1, pp. 207–232, 1905.
Discusses the formation of ore deposits.

Kemp (James Furman)—Continued.

36. The titaniferous magnetite in Wyoming.

Abstracts: Am. Geol., vol. 35, p. 64, 1905.
Science, new ser., vol. 21, p. 67, 1905.

37. The physiography of the Adirondacks.

Abstract: Science, new ser., vol. 21, pp. 988-989, 1905.

Kemp (James Furman) and **Grabau** (A. W.).

1. The Washington meeting of the Geological Society of America, December 30, 31, 1902, January 1 and 2, 1903.

Science, new ser., vol. 17, pp. 290-303, 1903.
Gives abstracts of papers read.

Kemp (James Furman) and **Hill** (B. F.).

1. Preliminary report on the pre-Cambrian formations in parts of Warren, Saratoga, Fulton, and Montgomery counties, New York.

N. Y. State Mus., 53d Ann. Rept., pp. r17-r35, 6 pls., 1901.

Kemp (James Furman) and **Knight** (W. C.).

1. Leucite hills of Wyoming.

Geol. Soc. Am., Bull., vol. 14, pp. 305-336, 10 pls., 1903; Columbia Univ., Geol. Dept., Contr., vol. 11, no. 94, 1903.
Reviews previous work, describes the geographic situation and general character of the region, the general geology, and in detail the twenty-two leucite hills with especial reference to physiographic features and petrographic character.

Kemp (J. F.), **Finlay** (George I.) and.

1. Nepheline syenite area of San José, Tamaulipas, Mexico.

See Finlay (George I.) and Kemp (J. F.), 1.

Kendall (J. D.).

1. Ore in sight.

Inst. Mg. & Metal., Trans., vol. 10, pp. 143-149, 7 figs., 1902; Mg. & Sci. Press, vol. 84, pp. 177-178, 1902; Mines & Minerals, vol. 23, pp. 13-14, 5 figs., 1902.

Kennedy (William), **Hayes** (C. W.) and.

1. Oil fields of the Texas-Louisiana Gulf coastal plain.

See **Hayes** (C. W.) and **Kennedy** (William), 1.

Kerr (D. G.).

1. Corundum in Ontario, Canada: its occurrence, working, milling, concentration, and preparation for the market as an abrasive.

Inst. Mg. Engrs., Trans., vol. 30, pp. 143-157, 6 figs., 1905.

Kerr (Frank M.).

1. The sulphur deposits of Calcasieu Parish [Louisiana].

Assoc. Eng. Soc., Jour., vol. 28, pp. 90-97, 1902.
Describes the occurrence of the sulphur and presents the record of a boring to a depth of 603 feet.

Kessler (H. H.) and **Hamilton** (W. R.).

1. The orbicular gabbro of Dehesa, California.

Am. Geol., vol. 34, pp. 133-140, 5 pls., 1904.
Describes the occurrence, geologic relations, megascopic and microscopic characters, and constitution.

Kewitsch (Georg).

1. Die Vulkane, Pelé, Krakatau, Etna, Vesuv.

Norden, Soltau's Verlag, 1902. 35 pp., 6 figs.

Keyes (Charles Rollin).

1. A depositional measure of unconformity.

Geol. Soc. Am., Bull., vol. 12, pp. 173-196, 1 pl., 1901.
Describes the development of the Carboniferous sediments in the Mississippi Valley and Southwestern regions.

Keyes (Charles Rollin)—Continued.

2. Origin and classification of ore deposits.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 323–356, 1901.
Discusses the nature of ore deposits, general methods of ore formation, the classification of ore deposits, and certain other phases of ore deposits.

3. Derivation of the terrestrial spheroid from the rhombic dodecahedron.

Jour. Geol., vol. 9, pp. 244–249, 1901.
Discusses Green's hypothesis of the tetrahedral form of the earth.

4. Composite genesis of the Arkansas Valley through the Ozark highlands.

Jour. Geol., vol. 9, pp. 486–490, 2 figs., 1901.
Discusses the evidences which indicate that there has been but one uplift in the region and that the river eroded its bed as fast as the strata were raised.

5. Ore formation on the hypothesis of concentration through surface decomposition.

Am. Geol., vol. 27, pp. 355–362, 1901.
Discusses the evidence as to the derivation of the lead and zinc ores of the Ozark region and their bearing on the origin of ore deposits in general.

6. Nomenclature of the Cambrian formations of the St. François Mountains [Missouri].

Am. Geol., vol. 28, pp. 51–53, 1901.
Discusses the validity of certain names applied to the Cambrian formations of the region.

7. A schematic standard for the American Carboniferous.

Am. Geol., vol. 28, pp. 299–305, 1 fig., 1901.
Presents a general section of the Carboniferous of the Mississippi Valley and discusses its correlation with other regions.

8. Time values of provincial Carboniferous terranes.

Am. Jour. Sci., 4th ser., vol. 12, pp. 305–309, 1 fig., 1901.
Discusses the time ratios of the several subdivisons of the Carboniferous of the Mississippi Valley region.

9. Note on the correlation of the Clarinda well section with the schematic section of the Carboniferous.

Iowa Geol. Surv., vol. 11, pp. 461–463, 1901.
Compares the well section with the general section.

10. A depositional measure of unconformity.

Abstract: Science, new ser., vol. 13, pp. 135–136, 1901.

11. On a crinoidal horizon in the Upper Carboniferous.

Science, new ser., vol. 13, pp. 915–916, 1901.
Describes its occurrence and its bearing on the stratigraphy of the Mississippi Valley.

12. Zone of maximum richness in ore bodies.

Science, new ser., vol. 14, pp. 577–578, 1901.
Contains abstracts of recent papers by Emmons and Weed.

13. Horizons of Arkansas and Indian Territory coals compared with those of other trans-Mississippian coals.

Eng. & Mg. Jour., vol. 71, pp. 692–693, 2 figs., 1901.
Discusses the relations of the coal-bearing horizons of the trans-Mississippian region.

14. The stratigraphical location of named trans-Mississippian coals.

Eng. & Mg. Jour., vol. 72, p. 198, 1901.
Gives list of geological formations and the coals occurring in each.

15. Contiguity of ore deposits of different generic relationships.

Abstract: Eng. & Mg. Jour., vol. 72, pp. 597-598, 1901.

16. Diverse origins and diverse times of formation of the lead and zinc deposits of the Mississippi Valley.

Mining & Metallurgy, vol. 24, pp. 715–717, 1901.

17. Origine eolienne du loess.

Soc. Belge de Geol., de Paleont. et d'Hydrol., Bull., vol. 12, pp. 14–21, 1901.
Discusses the origin of the loess of the Mississippi Valley.

Keyes (Charles Rollin)—Continued.

18. Depositional equivalent of hiatus at base of our Coal Measures; and the Arkansan series, a new terrane of the Carboniferous in the western interior basin.
Iowa Acad. Sci., Proc., vol. 8, pp. 119-128, 2 figs., 1901.
Discusses evidences of denudation prior to the deposition of the Coal Measures in this area, gives tables comparing the thickness of Coal Measures formations, and describes the Arkansan series.

19. Names of coals west of the Mississippi River.
Iowa Acad. Sci., Proc., vol. 8, pp. 128-137, 1901.
Discusses the Carboniferous deposits of the western interior coal field, tabulates the terranes and percentage of coal production of each, and gives a list of names that have been applied to the coal seams, with place of publication and stratigraphic position.

20. Diverse origins and diverse times of formation of the lead and zinc deposits of the Mississippi Valley.
Am. Inst. Mg. Engrs. Trans., vol. 31, pp. 603-611, 1902.
Discusses mode of formation of these ores.

21. [In discussion of "The origin of ore-deposits."]
Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 942-944, 962-966, 1902.

22. Character and stratigraphical peculiarities of the southwestern Iowa coal fields.
Eng. & Mg. Jour., vol. 73, p. 661, 1902.
Describes the stratigraphic position of these coals.

23. Determination of the Cambrian age [of] the magnesian limestones of Missouri.
Am. Geol., vol. 29, pp. 384-387, 1902.
Reviews previous determinations of the age of these limestones.

24. Geological age of certain gypsum deposits.
Am. Geol., vol. 30, pp. 99-102, 1902.
Discusses the evidences of the age of the Kansas and Iowa gypsum beds.

25. Cartographic representation of geological formations.
Jour. Geol., vol. 10, pp. 691-699, 2 figs., 1902.
Discusses the criteria by which formations are discriminated and the methods of their cartographic representation.

26. Devonian interval in Missouri.
Geol. Soc. Am., Bull., vol. 13, pp. 267-292, 1 pl., 1902.
Discusses lithologic and faunal characters of the strata and the evidence of unconformities.

27. Magmatic differentiation of rocks.
Science, new ser., vol. 15, pp. 32-33, 1902.
Discusses the formation of the Magnet Cove [Arkansas] igneous mass and the classification of rocks.

28. A Devonian hiatus in the continental interior—its character and depositional equivalents.
Iowa Acad. Sci., Proc., vol. 9, pp. 105-112, 1902.
Discusses the absence of Devonian strata in west central Missouri and the history and meaning of the terms Kinderhook and Chouteau.

29. Geological structure of New Mexican bolson plains.
Am. Jour. Sci., 4th ser., vol. 15, pp. 207-210, 3 figs., 1903.
Describes the characters of these plains and the geologic history of the region.

30. Ephemeral lakes in arid regions.
Am. Jour. Sci., 4th ser., vol. 16, pp. 377-378, 1903.

31. Some recent aspects of the Permian question in America.
Am. Geol., vol. 32, pp. 218-223, 1903.
Discusses questions of nomenclature and taxonomic rank.

32. A remarkable silver pipe.
Eng. & Mg. Jour., vol. 76, p. 805, 1903.
Discusses the occurrence and origin of "pipe-veins," and an occurrence in central New Mexico.

Keyes (Charles Rollin)—Continued.

33. Geology of the Apache Cañon placers [New Mexico].

Eng. & Mg. Jour., vol. 76, pp. 966–967, illus., 1903.

Describes the location of the placers, the discovery of the placer gold, the geology of the Sierra de los Caballos Mountains, and the occurrence of fissure veins.

34. Significance of the occurrence of minute quantities of metalliferous minerals in rocks.

Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 99–103, 1903.

35. Genesis of certain cherts.

Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 103–105, 1903.

36. Comparative values of different methods of geologic correlation in the Mississippi Basin.

Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 105–107, 1903.

37. Note on block mountains in New Mexico.

Am. Geol., vol. 33, pp. 19–23, 1904.

Discusses structure and formation of block mountains in New Mexico.

38. Bolson plains and the conditions of their existence.

Am. Geol., vol. 34, pp. 160–164, 1904.

Describes the characters of bolson plains and discusses their origin.

39. Remarkable occurrence of aurichalcite.

Iowa Acad. Sci., Proc. for 1903, vol. 11, p. 253, 1904.

Describes an occurrence of aurichalcite in the Magdalena Mountains in New Mexico.

40. Certain basin features of the high plateau region of southwestern United States.

Iowa Acad. Sci., Proc. for 1903, vol. 11, pp. 254–257, 1904.

Describes features of bolson plains of New Mexico, and discusses their origin.

41. Note on the Carboniferous faunas of Mississippi Valley in the Rocky Mountain region.

Iowa Acad. Sci., Proc. for 1903, vol. 11, pp. 258–259, 1904.

Notes the identity of many of the fossils from the two regions, although they have been described under different names.

42. Iron deposits of the Chupadera Mesa [New Mexico].

Eng. & Mg. Jour., vol. 78, p. 632, 1 fig., 1904.

Describes the occurrence and geologic relations of iron ores in central New Mexico and explains their origin.

43. The Hagan coal field [New Mexico].

Eng. & Mg. Jour., vol. 78, pp. 670–671, 3 figs., 1904.

Describes the occurrence and geologic relations of coal beds in central New Mexico.

44. Unconformity of the Cretaceous on older rocks in central New Mexico.

Am. Jour. Sci., 4th ser., vol. 18, pp. 380–382, 2 figs., 1904.

Describes the relations of the Cretaceous rocks to the underlying formations. Includes a table giving a general geological section for New Mexico, showing the sequence, thickness, and lithologic character of the geologic formations.

45. Structures of Basin ranges.

Jour. Geol., vol. 13, pp. [illegible], 5 figs., 1905.

Discusses systems of faulting and the general geologic structure of the Basin ranges of New Mexico, and the physiographic development of the New Mexican region.

46. The fundamental complex beyond the southern end of the Rocky Mountains.

Am. Geol., vol. 36, pp. 112–122, 1905.

Discusses age, relations, and character of igneous and altered clastic rocks occurring in the New Mexican portion of the Rocky Mountains.

47. Ore deposits of the Sierra de Los Caballos [New Mexico].

Eng. & Mg. Jour., vol. 80, pp. 149–151, 3 figs., 1905.

Describes the general geology of the region and the occurrence and character of lead deposits.

48. Zinc carbonate ores of the Magdalena Mountains.

Mg. Mag., vol. 12, pp. 108–114, 5 figs., 1905.

Describes the geology and the occurrence and relations of the zinc-ore deposits.

Keyes (Charles Rollin)—Continued.

49. Geology and underground water conditions of the Jornada del Muerto, New Mexico.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 123, 42 pp., 9 pls., 11 figs., 1905.

Describes the physiographic character of the region, the geologic structure, the occurrence and relations of Archean, Algonkian, Carboniferous, Jurassic-Triassic, Cretaceous, and Quaternary deposits, and of the eruptive rocks, and the underground water resources.

50. Triassic system in New Mexico.

Am. Jour. Sci., 4th ser., vol. 20, pp. 423–429, 1 fig., 1905.

Discusses the geologic position of the "Red Beds" of the Great Plains and the Southwest, and the occurrence and relationships of the Carboniferous and Triassic "Red Beds" in New Mexico.

51. The Jurassic horizon around the southern end of the Rocky Mountains.

Am. Geol., vol. 36, pp. 289–292, 1 fig., 1905.

Discusses the stratigraphic and time relations of some Mesozoic formations in New Mexico.

52. Bisection of mountain blocks in the Great Basin region.

Abstract: Iowa Acad. Sci., Proc., vol. 12, pp. 165–167, 3 figs., 1905.

53. Geological structure of the Jornada del Muerto and adjoining bolson plains [New Mexico].

Iowa Acad. Sci., Proc., vol. 12, pp. 167-169, 1 fig., 1905.

54. Northward extension of the Lake Valley limestone [New Mexico].

Iowa Acad. Sci., Proc., vol. 12, pp. 169-171. 1905.

Describes the occurrence of Carboniferous rocks in New Mexico

Kilham (John T.).

1. The oil wells of the United States.

Onondaga Acad. Sci., Proc., vol. 1, pp. 136–148, 1903.

An historical account of the discovery of oil and the development of the oil industry.

Killebrew (J. B.), **Safford** (J. M.) and.

1. The elements of the geology of Tennessee.

See **Safford** (J. M.) and **Killebrew** (J. B.), 1.

Kimball (James P.).

1. Bohemia mining district of western Oregon.

Eng. & Mg. Jour., vol. 73, pp. 889–890, 3 figs., 1902.

Contains notes on the geology and mining developments in the district.

Kindle (Edward M.).

1. The Devonian fossils and stratigraphy of Indiana.

Ind., Dept. of Geol. and Nat. Res., 25th Ann. Rept., pp. 529–763, 31 pls., 1901.

Reviews the nomenclature of the formations and describes the lithologic and faunal character of many sections, and the characters of a large number of fossils from the Devonian rocks of the State. Discusses the correlation of the formations.

2. The Niagara limestones of Hamilton County, Indiana.

Am. Jour. Sci., 4th ser., vol. 14, pp. 221–224, 2 figs., 1902.

Describes the lithologic and faunal characters of the limestones and correlates them with the Lockport limestone.

3. The Niagara domes of northern Indiana.

Am. Jour. Sci., 4th ser., vol. 15, pp. 459–468, 4 figs., 1903.

Discusses general structure and deformation of Niagara strata.

4. A series of gentle folds on the border of the Appalachian System.

Jour. Geol., vol. 12, pp. 281–289, 1 fig., 1904.

Describes the occurrence and character of anticlinal folds in the Watkins Glen quadrangle in southern New York.

5. Note on some concretions in the Chemung of southern New York.

Am. Geol., vol. 33, pp. 360–363, 3 figs., 1904.

Describes the occurrence in the Chemung of a bed of concretions in connection with a fossiliferous band, and gives an explanation of their origin.

6. The stratigraphy and paleontology of the Niagara of northern Indiana.

Ind., Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 397–486, 28 pls., 1904.

Kindle (Edward M.)—Continued.

7. Salt and other resources of the Watkins Glen district, New York.

U. S. Geol. Surv., Bull. no. 260, pp. 567-572, 1905.

Describes the location of the salt deposits, the general geology, and the strata penetrated in the salt wells; also the occurrence of natural gas.

8. Water resources of the Catatonk area, New York.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 53-57, 1905.

Kindle (Edward M.) and **Breger** (C. L.).

1. Paleontology of the Niagara of northern Indiana.

Ind., Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 428-486, 28 pls., 1904.

Kindle (E. M.), **Williams** (H. S.) and.

1. Contributions to Devonian paleontology, 1903.

See **Williams** (H. S.) and **Kindle** (E. M.), 1.

Kingsley (J. S.).

1. The origin of the mammals.

Science, new ser., vol. 14, pp. 193-205, 5 figs., 1901.

Kinney (Bryce A.).

1. Annual report of the State natural-gas supervisor.

Ind., Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 357-375, 1904.

2. Annual report of the State natural-gas supervisor.

Ind., Dept. Geol. & Nat. Res., 29th Ann. Rept., pp. 757-799, 1905.

Kinzie (Robert A.).

1. Mining at the Alaska Treadwell.

Eng. & Mg. Jour., vol. 76, pp. 583-587, illus., 1903.

Describes the occurrence of the ore and the methods of mining.

2. The Treadwell group of mines, Douglas Island, Alaska.

Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 334-386, 14 figs., 1904.

Includes a brief description of the geology of the district.

Kirby (Edmund B.).

1. Methods of testing and sampling placer deposits.

Colo. Sci. Soc., Proc., vol. 6, pp. 186-199 [1902].

2. The ore deposits of Rossland, British Columbia.

Mg. Rep., vol. 50, pp. 326-328, 3 figs., 1904. Mg. & Sci. Press, vol. 88, pp. 331, 347, 1904. Can. Mg. Rev., vol. 23, pp. 60-61, 1904. Can. Mg. Inst., Jour., vol. 7, pp. 47-69, 4 pls. (maps), 1904.

Describes the geologic occurrence, relations to surrounding rocks, and character of the gold, silver, and copper ore deposits of this locality.

Kirchoffer (William Gray).

1. The sources of water supply in Wisconsin.

Wis. Univ. Bull., Eng. ser., vol. 3, pp. 163-249, 3 pls., 1905.

Includes a general account of the geology of Wisconsin.

Kirk (Charles Townsend).

1. A preliminary report on the contact of the Permian with the Pennsylvanian in Oklahoma.

Okla., Dept. Geol. & Nat. Hist., 3d Bien. Rept., pp. 5-14, 1904.

Describes physiography of the region examined, the occurrence, character, and economic products of Carboniferous strata in Oklahoma and their differentiation into Pennsylvanian and Permian.

Kirk (Morris P.).

1. The Terlingua quicksilver district [Texas].

Mg. Mag., vol. 11, pp. 441-443, 2 figs., 1905.

Includes brief notes on the geology of the district.

Kirk (M. P.) and **Malcolmson** (J. W.).

1. A new quicksilver mining district [Texas].

Eng. & Mg. Jour., vol. 77, pp. 685-686, 1 fig., 1904.

Describes occurrence, character, geologic relations, and economic development of quicksilver-ore deposits in Texas.

Kirsopp (John, jr.).

1. The coal fields of Cook Inlet, Alaska, U. S. A., and the Pacific coast.

   Inst. Mg. Engrs. [England], Trans., vol. 21, pp. 516-566, 2 pls., 1903.

   Describes geologic occurrence of coal in Alaska and distribution of coal in Alaska, British Columbia, and Washington.

Klein (Carl).

1. Über die am 7. Mai 1902 vom Vulcan Soufrière auf St. Vincent ausgeworfene vulcanische Asche.

   K. preus. Akad. d. Wiss., Sitzungsb., pp. 993-994, 1902.

   Describes the fall of volcanic ash in St. Vincent and its composition.

2. Über das Meteoreisen von Persimmon Creek, bei Hot House, Cherokee Co., Nord-Carolina.

   K. preus. Akad. d. Wiss., Sitzungsb., p. 557, 1904.

   Describes characters of this meteorite.

Klem (Mary J.).

1. A revision of the Paleozoic Paleechinoidea, with a synopsis of all known species.

   St. Louis Acad. Sci., Trans., vol. 14, pp. 1-98, 6 pls., 1904.

Knapp (George N.).

1. Underground waters of New Jersey. Wells drilled in 1903.

   N. J. Geol. Surv., Ann. Rept. for 1903, pp. 73-93, 2 pls., 1904.

   Describes extent and character of the physiographic provinces of New Jersey and their water supply, and gives data regarding wells drilled in 1903.

2. The Cliffwood clays and the Matawan.

   Am. Geol., vol. 33, pp. 23-27, 1904.

   Discusses stratigraphic position of the formations occurring at Cliffwood, N. J.

3. Underground waters of eastern United States: New Jersey.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 93-103, 1 pl., 1 fig., 1905.

   Describes briefly the general geology, the physiographic provinces, and the underground water resources.

Knapp (George N.), **Kümmel** (Henry B.) and.

1. The stratigraphy of the New Jersey clays.

   See **Kümmel** (Henry B.) and **Knapp** (George N.), 1.

Knapp (S. A.).

1. Tonopah [Nevada].

   Mg. and Sci. Press, vol. 82, p. 231, 1901.

   Describes occurrence of gold and silver at this locality.

Knight (C. W.).

1. Notes on some deposits in the eastern Ontario gold belt.

   Can. Mg. Inst., Jour., vol. 7, pp. 210-244, 12 figs., 1904.

   Describes the general geology of the district, and in detail the occurrence and character of the gold ore deposits and associated rocks of the Belmont and Star of the East gold mines, and discusses their origin.

Knight (Nicholas).

1. Some Iowa dolomites.

   Am. Jour. Sci., 4th ser., vol. 11, pp. 244-246, 1901.

   Contains chemical analyses of the dolomites.

2. Some recent analyses of Iowa building stones; also of potable waters.

   Iowa Acad. Sci., Proc., vol. 8, pp. 104-109, 1901.

3. Analysis of the Mount Vernon [Iowa] loess.

   Am. Geol., vol. 29, p. 189, 1902.

4. Apatite crystals, Antwerp, New York.

   Am. Geol., vol. 31, p. 62, 1903.

5. The dolomites of eastern Iowa.

   Am. Geol., vol. 34, pp. 64-66, 1904; Geol. Mag., dec. 5, vol. 1, pp. 493-495, 1904.

   Describes investigations upon the composition of dolomites.

Knight (Nicholas)—Continued.

6. Some features in the analysis of dolomite rock.

   Iowa Acad. Sci., Proc. for 1903, vol. 11, pp. 127-131, 1904.
   Describes composition of examples of dolomite rock from the Niagara of Iowa.

7. Estimation of the silica in the Bedford limestone.

   Am. Geol., vol. 36, pp. 57-60, 1905.
   Describes a chemical examination of the Bedford limestone of Indiana.

Knight (Wilbur Clinton).

1. Description of Bates Hole [Wyoming].

   Abstract: Jour. Geol., vol. 9, pp. 70-71, 1901; Geol. Soc. Am., Bull., vol. 12, pp. 495-496, 1901.
   Describes the physiographic and geologic features of the region.

2. The petroleum fields of Wyoming.

   Eng. and Mg. Jour., vol. 72, pp. 358-359, 628-630, 4 figs., and map, 1901.
   Describes the geology and character and occurrence of the oil in the several oil-bearing districts of the State.

3. The Sweetwater mining district, Fremont County, Wyoming.

   Wyo. Univ., School of Mines, 35 pp., 1 map, 1901.
   Describes occurrence of gold in this district.

4. Further notes on the occurrence of rare metals in the Rambler mine, Wyoming.

   Eng. & Mg. Jour., vol. 73, p. 696, 1902.
   Contains notes on the occurrence of platinum and other rare metals.

5. The petroleum fields of Wyoming, III. The fields of Uinta County.

   Eng. & Mg. Jour., vol. 73, pp. 720-722, 4 figs., 1902.
   Describes the topography, general geology, and occurrence of oil in Uinta County.

6. The Laramie Plains Red Beds and their age.

   Jour. Geol., vol. 10, pp. 412-422, 1902.
   Reviews the literature of the subject, gives a detailed section in Red Mountain, and discusses the age of the Red Beds and their associated strata.

7. Coal fields of southern Uinta County, Wyoming.

   Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 542-544, 1903.
   Describes briefly the Cretaceous strata of the region and gives chemical analyses of the coal.

8. Some notes on the genus Baptanodon, with a description of a new species.

   Am. Jour. Sci., 4th ser., vol. 16, pp. 76-81, 3 figs., 1903.

9. Gypsum deposits in Wyoming.

   U. S. Geol. Surv., Bull. no. 223, pp. 79-85, 1 pl., 2 figs, 1904.
   Describes character, extent, occurrence, economic development, and geologic relations of the gypsum deposits occurring in the Red Beds in Wyoming.

Knight (Wilbur Clinton) and **Slosson** (E. E.).

1. Alkali lakes and deposits [Wyoming].

   Wyo. Univ., Exp. Stat., Bull. no. 49, pp. 72-123, 1 map, 1901.
   Describes the character, occurrence, and origin of the deposits of considerable depth.

2. The Dutton, Rattlesnake, Arago, Oil Mountain, and Powder River oil fields [Wyoming].

   Wyo. Univ., School of Mines, Petroleum Ser., Bull. no. 4, 57 pp., 1 fig., 2 maps, 1902.
   Describes the occurrence and character of the oils in the several districts.

3. The Newcastle oil field [Wyoming].

   Wyo. Univ., School of Mines, Petroleum Ser., Bull. no. 5, 25 pp., 1902.
   Describes the topography, geology, and development of oil of this area.

4. The Bonanza, Cottonwood, and Douglas oil fields.

   Wyo. Univ., School of Mines, Petroleum Ser., Bull. no. 6, 30 pp., 1903.
   Describes geographic location and geologic structure of these fields, the character of the oil, and the possibilities of production.

Knight (Wilbur Clinton), **Kemp** (J. F.) and.

1. Leucite hills of Wyoming.

   See **Kemp** (J. F.) and **Knight** (W. C.), 1.

Knight (William H.).

1. Address at the presentation of the memorial bronze of Edward Waller Claypole, Throop Polytechnic Institute, Passadena, Cal., June 2, 1902. (Not seen.)

Knopf (A.) and **Thelen** (P.).

1. Sketch of the geology of Mineral King, California.

   Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 227-262, 3 pls., 1905.
   Describes the physiography, evidences of glaciation and its effects, the occurrence, character, and relations of igneous and stratified rocks, and their petrography and metamorphism, and discusses the relations of the Mineral King belt to the granite.

Knowlton (Frank Hall).

1. [Report on the Clarno flora, Oregon.]

   niv. of Cal., Dept. of Geol., Bull., vol. 2, pp. 287-291, 1901.
   Gives list of fossil plants collected.

2. [Report on the flora of the Mascall formation, Oregon.]

   Univ. of Cal., Dept. of Geol., Bull., vol. 2, pp. 308-309, 1901.
   Gives list of fossils collected.

3. Report on fossil wood from the Newark formation of South Britain, Connecticut.

   U. S. Geol. Surv., 21st Ann. Rept., pt. 3, pp. 161-162, 1901.
   Briefly describes material.

4. A fossil nut pine from Idaho.

   Torreya, vol. 1, pp. 113-115, 3 figs., 1901.
   Describes Pinus lindgrenii n. sp.

5. Fossil hickory nuts.

   Plant World, vol. 4, pp. 51-52, 1901.

6. A fossil flower.

   Plant World, vol. 4, pp. 73-74, 1901.

7. Fossil sequoias in North America.

   Plant World, vol. 4, p. 111, 1901.

8. Preliminary report on fossil plants from the State of Washington, collected by Henry Landes, 1901.

   Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 32-33, 1902.
   Gives lists of species of fossil plants determined.

9. A fossil nut pine.

   Plant World, vol. 5, pp. 33-34, 2 figs., 1902.
   Describes Pinus lindgrenii.

10. Fossil mosses.

    Plant World, vol. 5, pp. 243-244, 1902.
    Gives a summary of what is known regarding these forms.

11. Notes on the fossil fruits and lignites of Brandon, Vermont.

    Torrey Bot. Club, Bull., vol. 29, pp. 635-641, 1 pl., 1902.

12. Report on a small collection of fossil plants from the vicinity of Porcupine Butte, Montana.

    Torrey Bot. Club, Bull., vol. 29, pp. 705-709, 1 pl., 1 fig., 1902.

13. Six new species.

    Science, new ser., vol. 16, pp. 273-274, 1902.
    A critical review of a paper by H. Herzer on "Six new species, including two new genera, of fossil plants," in 9th Ann. Rept. Ohio State Acad. Sci.

14. Fossil flora of the John Day Basin, Oregon.

    U. S. Geol. Surv., Bull. no. 204, 153 pp., 17 pls., 1902.
    Gives a brief description of the geologic formations and localities of this area, describes the fossil plants, and discusses critically the age and relations to other floras.

15. Description of a new fossil species of Chara.

    Torreya, vol. 2, pp. 71-72, 1 fig., 1902.

Knowlton (Frank Hall)—Continued.

16. Fossil plants from Kukak Bay [Alaska].

Harriman Alaska Expedition, vol. 4, pp. 149–162, 12 pls., 1904.

17. Fossil floras of the Yukon.

Abstract: Science, new ser., vol. 19, pp. 733–734, 1904.

18. Fossil plants of the Judith River beds.

U. S. Geol. Surv., Bull. no. 257, pp. 129–155, 6 pls., 1905.

Knox (Newton Booth).

1. Dredging and valuing dredging-ground in Oroville, California.

Can. Mg. Rev., vol. 22, pp. 211–213, 1903.
Contains observations on the occurrence of gold in the placer deposits.

Koenig (George A.).

1. The crystallization of mohawkite, domeykite, and other similar arsenides.

Lake Superior Mg. Inst., Proc., vol. 7, pp. 62–64 [1901?].

2. On the new species melanochalcite and keweenawite, with notes on some other known species.

Am. Jour. Sci., 4th ser., vol. 14, pp. 404–416, 1902.
Describes occurrence and chemical characters of the material.

Kofoid (C. A.).

1. The plankton of the Illinois River, 1894–1899, with introductory notes upon the hydrography of the Illinois River and its basin. Part I. Quantitative investigations and general results.

Ill. State Lab. Nat. Hist., Bull., vol. 6, pp. 95–629, 50 pls., 1903.
Includes a brief account of geologic and hydrographic features of the Illinois River basin.

Kolderup (Carl Fred.).

1. Guldforekomsterne i Alaska og tilgrænsende strœg. [The occurrence of gold in Alaska and adjacent regions.]

Naturen, Bergen, vol. 25, pp. 361–366, 2 figs., 1901.

2. Nordhavets bund og den gamle landbro mellen Island og Grœnland. [The bottom of the Arctic Ocean and the old bridge between Iceland and Greenland.]

Naturen, Bergen, vol. 26, pp. 142–146, 1902.

3. De vulkanske udbrud i Vestindien. [The volcanic eruption in the West Indies.]

Naturen, Bergen, vol. 26, pp. 353–363, 3 figs., 1902.
Describes eruptions of La Soufrière in St. Vincent and Mont Pelé in Martinique.

4. The rock name anorthosyte.

Am. Geol., vol. 31, pp. 392–393, 1903.

Kraus (Edward H.).

1. A new exposure of serpentine at Syracuse, N. Y.

Am. Geol., vol. 33, pp. 330–332, 1904.
Describes occurrence, character, and relations to other dike exposures.

2. The occurrence of celestite near Syracuse, N. Y., and its relation to the vermicular limestones of the Salina epoch.

Am. Jour. Sci., 4th ser., vol. 18, pp. 30–39, 4 figs., 1904.

3. Some interesting mineral occurrences in the Salina epoch.

Abstract: Science, new ser., vol. 19, pp. 619–620, 1904.
Describes occurrence of hematite and celestite.

4. Occurrence and distribution of celestite-bearing rocks.

Am. Jour. Sci., 4th ser., vol. 19, pp. 286–293, 5 figs., 1905.
Describes the occurrence and character of celestite-bearing rocks, particularly on Put-in-Bay Island, Lake Erie.

5. Celestite-bearing rocks.

Am. Geol., vol. 35, p. 130, 1905.
A brief note on the occurrence of celestite and the origin of certain limestones and dolomites.

Kraus (Edward H.)—Continued.

6. On the origin of the caves of the island of Put-in-Bay, Lake Erie.

Am. Geol., vol. 35, pp. 167-171, 1 fig., 1905.

7. Hydration caves.

Science, new ser., vol. 22, pp. 502-503, 1905.

Kraus (E. H.) and **Reitinger** (J.).

1. Hussakite, a new mineral, and its relation to xenotime.

Am. Geol., vol. 30, pp. 46-55, 1902.
Describes the chemical and crystallographic characters of the material.

Krebs (Wilhelm).

1. Flutschwankungen und die vulkanischen Ereignisse in Mittelamerika.

Globus, Bd. 84, pp. 72-74, 1903.
Discusses connection between high tides in the Pacific Ocean and the volcanic activity in Central America in 1902.

Kroustchoff (K. de).

1. Note sur une roche basaltique de la Sierra Verde [Mexico].

Soc. Cient. Ant. Alz., vol. 16, Rev. pp. 17-26, 1901.

Krusch (P.).

1. Ueber eine Kupfererzlagerstätte in Nieder-Californien.

Zeitsch. f. prak. Geol., Jahrg. 1899, heft 3, pp. 83-86, 1899.
Describes occurrence of copper-ore bodies.

Kümmel (Henry B.).

1. Report on Portland-cement industry [New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1900, pp. 9-101, 11 pls., 33 figs., 1901.
Describes the composition of Portland cement, and the character and occurrence of the lower Paleozoic rocks from which the materials are derived. Includes detailed descriptions of localities.

2. The mining industry. [New Jersey.]

N. J. Geol. Surv., Ann. Rept. for 1900, pp. 197-217, 1901.
Contains statistics and notes on iron, zinc, and copper.

3. The mining industry [of New Jersey].

N. J. Geol. Surv., Ann. Rept, for 1901, pp. 133-161, 1902.
Contains notes on the occurrence of iron, zinc, and copper ores.

4. Administrative report [of the State geologist of New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1902, pp. 5-24, 1903.
Reviews the work of the New Jersey Geological Survey during the year ending October 31, 1902.

5. The iron and zinc mines [New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1902, pp. 115-123, 1903.
Describes the occurrence of the ores and the mining operations.

6. A summary of the work of the Geological Survey of New Jersey, with a subject index to its reports.

N. J. Geol. Surv., Summary and Index to Repts., 27 pp., 1903.

7. Administrative report of the State geologist.

N. J. Geol. Surv., Ann. Rept. for 1903, pp. xiii-xxxvi, 1904.
Outlines the work of the New Jersey Geological Survey for the year ended October 31, 1903.

8. Administrative report [of the State geologist of New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1904, pp. 3-25, 1905.

9. A report upon some molding sands of New Jersey.

N. J. Geol. Surv., Ann. Rept. for 1904, pp. 187-246, 1905.
Describes characters, composition, distribution, and geologic relations.

10. Well records [New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1904, pp. 263-271, 1905.
Gives records of strata passed through in borings.

Kümmel (Henry B.) and **Knapp** (George N.).

1. The stratigraphy of the New Jersey clays.

   N. J. Geol. Surv., vol. 6, pp. 117-209, 10 pls., 1904.
   Describes the occurrence and geologic relations of clays of Pleistocene, Tertiary, Creta and older systems of New Jersey.

Kümmel (Henry B.) and **Weller** (Stuart).

1. Paleozoic limestones of Kittatiny Valley, New Jersey.

   Geol. Soc. Am., Bull., vol 12, pp. 147-164, 1901. Abstract: Science, new ser., vol. 13, p. 13
   Describes the lithologic and faunal characters of the subdivisions of the Cambrian and vician series and the structure of the region.

2. The rocks of the Green Pond Mountain region.

   N. J. Geol. Surv., Ann. Rept. for 1901, pp. 1-51, 2 figs., 6 pls., 1902.
   Describes geologic occurrence and history and geographic distribution of the formati this area, and gives lists of fossils determined.

Kunz (George F.).

1. Des progrès de la production des pierres précieuses aux États-Unis.

   Intern. Cong. géol., Compte Rendu, viii session, pp. 393-395, 1901.

2. Precious stones in the United States in 1901.

   Eng. & Mg. Jour., vol. 73, p. 38, 1902.

3. Composition of tourmaline.

   Eng. & Mg. Jour., vol. 73, pp. 482-483, 1902.

4. Gems and precious stones of Mexico.

   Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 55-93, 1902.
   Describes occurrence, properties, etc.

5. Californite (vesuvianite), a new ornamental stone.

   Am. Jour. Sci., 4th ser., vol. 16, pp. 397-398, 1903.
   Describes occurrence, characters, and composition.

6. Native bismuth and bismite from Pala, California.

   Am. Jour. Sci., 4th ser., vol. 16. p. 398, 1903.

7. On a new lilac-colored transparent spodumene.

   Am. Jour. Sci., 4th ser., vol. 16, pp. 264-267, 1 pl., 1903; Science, new ser., vol. 18, p. 28
   Describes occurrence and characters.

8. Gem minerals of southern California.

   Abstract: Science, new ser., vol. 19, pp. 107-108, 1904.
   Describes the occurrence and characters of some gem minerals recently discovered.

9. Clackamas meteoric iron.

   Abstract: Science, new ser., vol. 19, p. 108, 1904.
   Describes the occurrence and characters of a meteoric mass recently discovered.

10. The exhibit of the U. S. Geological Survey radium collection shown Louis Exposition.

    Abstract: Science, new ser., vol. 21, p. 665, 1905.
    Includes brief notes on the Cañon Diablo meteorite.

L.

Lacroix (A.).

1. Les roches volcaniques de la Martinique.

   Acad. des Sci. [Paris], Compt. rend., vol. 134, pp. 1246-1248, 1902.

2. Sur les cendres des éruptions de la Montagne Pelée de 1851 et de 190

   Acad. des Sci. [Paris]. Compt. rend., vol. 134, pp. 1327-1329, 1902.
   Describes characters of volcanic ashes ejected from Mont Pelé.

3. Les roches volcaniques de la Martinique.

   Acad. des Sci. [Paris], Compt. rend., vol. 134, pp. 1369-1371, 1902.
   aracters of volcanic material from Martinique.

Lacroix (A.)—Continued.

4. Mission de la Martinique.
   Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 147-150, 1902.
   Describes observations upon Mont Pelé and the surrounding country after the eruptions.

5. Sur les roches rejetées par l'éruption actuelle de la Montagne Pelée.
   Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 451-454, 1902.
   Discusses the character of rocks ejected by Mont Pelé.

6. Les enclaves des andésites de l'éruption actuelle de la Montagne Pelée.
   Acad. des. Sci. [Paris], Compt. rend., vol. 135, pp. 470-472, 1902.
   Discusses the composition of rocks ejected by Mont Pelé.

7. Nouvelles observations sur les éruptions volcaniques de la Martinique.
   Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 672-674, 1902.
   Records observations upon the effects of the volcanic eruptions in Martinique.

8. Sur l'état actuel du volcan de la Montagne, Pelée, à la Martinique.
   Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 771-773, 1902.
   Gives observations upon conditions prevailing at the summit of Mont Pelé at the time of the writer's visit.

9. État actuel du volcan de la Martinique.
   Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 992-997, 1902.
   Gives observations made during an ascent of Mont Pelé by the writer on November 8, 1902.

10. Quelques observations minéralogiques faites sur les products de l'incendie de Saint-Pierre (Martinique).
    Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 1068-1071, 1902.
    Describes effects of the conflagration at St. Pierre upon the andesites used in buildings.

11. Nouvelles observations sur les éruptions volcaniques de la Martinique.
    Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 1301-1307, 1902.
    Describes observations upon volcanic phenomena of Mont Pelé during November and December of 1902.

12. Les éruptions des nuages denses de la Montagne Pelée.
    Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 216-218, 1903.
    Describes eruptive phenomena of Mount Pelé.

13. L'éruption de la Montagne Pelée en janvier, 1903.
    Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 442-443, 1903.
    Describes an eruption of Mount Pelé that took place in January of 1903.

14. Sur l'état actuel de la Soufrière de la Guadeloupe.
    Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 656-659, 1903.
    Describes the volcanic activity of Soufrière in Guadeloupe.

15. Sur une éruption du volcan de Saint Vincent.
    Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 803-807, 1903.
    Describes observations upon the volcano Soufrière in the island of St. Vincent.

16. Principaux résultats de la mission de la Martinique.
    Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 871-876, 1903.
    Discusses volcanic phenomena observed on the island of Martinique.

17. La cordiérite dans les produits éruptifs de la Montagne Pelée et de la Soufrière de Saint Vincent.
    Acad. des Sci. [Paris], Compt. rend., vol. 137, pp. 145-147, 1903.
    Describes the composition and mode of formation of some eruptive products of Mont Pelé and the Soufrière of St. Vincent.

18. Les enclaves basiques des volcans de la Martinique et de Saint Vincent.
    Acad des Sci. [Paris], Compt. rend., vol. 137, pp. 211-213, 1903.
    Discusses the composition of some eruptive products of Mont Pelé (1902) and of the Soufrière of St. Vincent.

19. Les dernières éruptions de Saint-Vincent.
    Ann. de Geog., Paris, no. 63, 12e Année, pp. 261-268, 2 pls., 1903.
    Describes observations upon volcanic phenomena in the island of St. Vincent.

Lacroix (A.)—Continued.

20. La Montagne Pelée et ses éruptions.

Paris, Masson et Cie., 1904. xxii, 662 pp., 30 pls. and 238 figs., 4to.

Gives a full account of the volcanic phenomena connected with the eruptions of La Montagne Pelée in 1902.

Lacroix (A.), **Rollet de l'Isle**, and **Giraud** (J.).

1. Sur l'éruption de la Martinique.

Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 377-391, 419-431, 1902.

Gives a general account of the eruptions of Mont Pelé, with observations upon various volcanic phenomena, topographic changes, and the character of the ejectamenta.

Laflamme (J. C. K.).

1. Modifications remarquables causées a l'embouchere de la Rivière Ste-Anne par l'eboulement de St-Alban.

Can. Roy. Soc., Proc. and Trans., new ser., vol. 6, sect. 4, pp. 175-177, 1900.

2. Eboulement à Saint-Luc-de-Vincennes, Rivière Champlain, le 21 Septembre, 1895.

Can. Roy. Soc., Proc. and Trans., new ser., vol. 6, sect. 4, pp. 179-186, 1 fig., 1900.

3. Geological exploration of Anticosti [Canada].

Can. Geol. Surv., Summ. Rept. for 1901, pp. 188-194, 1902.

Describes the author's observations upon the island.

La Forge (Laurence).

1. Water resources of central and southwestern Highlands of New Jersey.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 141-155, 1905.

La Forge (Laurence), **Crosby** (W. O.) and.

1. Notes on the wells, springs, and general water resources of Massachusetts.

See **Crosby** (W. O.) and **La Forge** (Laurence), 1.

Laguerenne (Teodoro L.).

1. Estado de Tabasco [Mexico].

Soc. Cient. Ant. Alz., Mem., vol. 17, pp. 125-131, 1902.

Describes topographic and geologic features and mineral deposits of this State.

Laird (George A.).

1. The gold mines of the San Pedro district, Cerro de San Pedro, State of San Luis Potosi, Mexico.

Am. Inst. Mg. Engrs., Bi-Mo. Bull. no. 1, pp. 69-89, 1 fig.; Trans., vol. 35, pp. 858-878, 1 fig., 1905.

Describes the general geology, the character and occurrence of the ore deposits in the different mines and openings, and the mining methods and production.

Lakes (Arthur).

1. The American Nettie [Colorado].

Mines & Minerals, vol. 21, pp. 241-245, 5 figs., 1901.

Describes the geology of the region and the occurrence of ores in cave deposits.

2. Cripple Creek [Colorado].

Mines & Minerals, vol. 21, pp. 276-280, 7 figs., 1901.

Describes volcanic rocks and phenomena of the region.

3. The Curtis coal mine [Colorado].

Mines & Minerals, vol. 21, p. 298, 1901.

Brief description of occurrence and character of coal near Colorado Springs

4. Cave ore deposits [Colorado].

Mines & Minerals, vol. 21, pp. 333-334, 1 fig., 1901.

Describes character and occurrence of ore bodies in the San Juan region.

5. The Cerrillos anthracite mines [New Mexico].

Mines & Minerals, vol. 21, pp. 341-342, 1901.

Describes character and occurrence of coal in this region.

6. A new coal field [New Mexico].

Mines & Minerals, vol. 21, pp. 375-376, 2 figs., 1901.

Describes the geology of the region and the occurrence of coal.

Lakes (Arthur)—Continued.

7. The turquoise mines [New Mexico].
Mines & Minerals, vol. 21, pp. 395-396, 1901.

8. Change of ore bodies with change of country rock.
Mines & Minerals, vol. 21, p. 417, 1901.
Discusses some phenomena accompanying ore deposition.

9. Peculiar geological formations of the Southern States.
Mines & Minerals, vol. 21, p. 430, 1901.
Contains notes on the general geology of the region.

10. Oil fields of California.
Mines & Minerals, vol. 21, pp. 467-470, 2 figs., 1901.
Describes the general geology of southern California and the occurrence of oil.

11. Prospecting for oil in Colorado.
Mines & Minerals, vol. 21, pp. 481-483, 4 figs., 1901.
Describes general geology and occurrence of oil in Colorado.

12. Building and monumental stones of Colorado.
Mines & Minerals, vol. 22, pp. 29-30, 5 figs., 1901.
Describes the general characters and occurrence of various building stones.

13. Sedimentary building stones of Colorado.
Mines & Minerals, vol. 22, pp. 62-64, 5 figs., 1901.
Describes occurrence and character of building stones from sedimentary strata.

14. Petroleum in western North America.
Mines & Minerals, vol. 22, pp. 78-80, 1901.
Describes the occurrence of oil in this region.

15. The geology of the oil fields of Colorado.
Colo. Sch. Mines, Bull., vol. 1, pp. 221-226, 1901.
Describes the stratigraphy and geologic structure of the oil fields and the occurrences of oil.

16. Prospecting for oil in Colorado.
Mines & Minerals, vol. 22, pp. 107-109, 5 figs., 1901.
Contains notes on the occurrence of oil.

17. Oil Springs of Rio Blanco County, Colorado.
Mines & Minerals, vol. 22, pp. 150-152, 5 figs., 1901.
Describes the geologic structure and occurrence of oil.

18. Some Idaho mining districts.
Mines & Minerals, vol. 22, pp. 203-206, 5 figs., 1901.
Contains notes on the geology of the State and the character and occurrence of ore bodies.

19. The geological occurrence of oil in Colorado.
Abstract: Sci. Am. Suppl., vol. 52, p. 21505, 1901.

20. The Buckhorn mine and the San Luis Park, Colorado. Peculiar formations which contain some ores and present a striking appearance.
Mines & Minerals, vol. 22, pp. 322-323, 3 figs., 1902.

21. Oil in Colorado, the geology of the deposits, and the various horizons in which signs of oil have been found.
Mines & Minerals, vol. 22, pp. 256-257, 1902.

22. A lesson on faults. Sketch of the Aspen mining region, Colorado, in which the effects of faulting in the past, and still going on, are shown.
Mines & Minerals, vol. 22, pp. 341-343, 6 figs., 1902.

23. The coal, graphite, and oil fields of Raton, New Mexico. The location and geological character. The coal mines.
Mines & Minerals, vol. 22, pp. 350-352, 5 figs., 1902.

24. The western oil field of Mesa and Rio Blanco counties, Colorado. A region geologically favorable for oil.
Mines & Minerals, vol. 22, pp. 388-389, 4 figs., 1902.
Describes the general geology of the region.

Lakes (Arthur)—Continued.

25. Geology along the Animas River, with descriptions of coal and metal mines along its course, including a sketch of the Silver Lake mine [Colorado].
    Mines & Minerals, vol. 22, pp. 398-399, 3 figs., 1902.
    Describes the character and occurrence of the coal and associated strata.

26. Natural gas in Colorado, a description of some of its occurrences and the conditions which point to the probability of its existence.
    Mines & Minerals, vol. 22, pp. 417-418, 2 figs., 1902.

27. Prospecting for oil in the region of the cliff dwellers of southeastern Colorado.
    Mines & Minerals, vol. 22, pp. 438-440, 3 figs., 1902.
    Describes the general geology and structure of the region.

28. The Spanish peaks. Coal region in southern Colorado. An illustration of the effects of volcanic action on coal seams.
    Mines & Minerals, vol. 22, pp. 463-464, 4 figs., 1902.
    Gives a summary of R. C. Hill's description of the region.

29. Crestone mining district in San Luis Park, Colorado. A region containing some good veins favorably situated for economical mining.
    Mines & Minerals, vol. 22, pp. 467-468, 3 figs., 1902.

30. Glacial placer beds on the flanks of the Mosquito Range, South Park, Colorado.
    Mines & Minerals, vol. 22, p. 469, 1 fig., 1902.

31. Prospecting for coal in the western States—points of resemblance and points of difference between the western and eastern coal fields.
    Mines & Minerals, vol. 22, pp. 506-507, 2 figs., 1902.

32. The prairie region of northeastern Colorado. A description of some interesting geological occurrences near Sterling.
    Mines & Minerals, vol. 22, p. 510, 2 figs., 1902.
    Describes the Tertiary strata of the region.

33. Faults in metal mines. The different types and their various manifestations, their effects upon ore deposition.
    Mines & Minerals, vol. 22, pp. 541-542, 6 figs., 1902.

34. Volcanoes. The manner of their eruption, their effect upon the deposition of minerals.
    Mines & Minerals, vol. 22, pp. 554-556, 4 figs., 1902.

35. South Park, Colorado. A description of its geology and economic resources in gold, silver, lead, coal, and oil.
    Mines & Minerals, vol. 23, pp. 78-79, 1902.
    Describes the general geology of the region.

36. Prospecting for oil in Wyoming. A description of the prospects in the country around Medicine Butte, and Red Mountain, Uinta County.
    Mines & Minerals, vol. 23, pp. 99-100, 2 figs., 1902.
    Describes the Cretaceous and Tertiary strata of the region.

37. Great Salt Lake basin. A description of the terraces which show the shores of the ancient lake when it was much larger than now.
    Mines & Minerals, vol. 23, pp. 112-113, 2 figs., 1902.

38. Sketching the characteristic features of rocks.
    Sci. Am. Suppl., vol. 74, p. 22339, 1902.

39. Aguilar coal and oil district. A description of the geology, the thickness and quality of the coal veins, and the indications of oil.
    Mines & Minerals, vol. 23, pp. 196-198, 4 figs., 1903.

40. The soils of Colorado in relation to their geological origin and surroundings, and their availability for irrigation.
    Mines & Minerals, vol. 23, pp. 207-209, 1903.

Lakes (Arthur)—Continued.

41. The La Plata Mountains. Observations on their formations and the influence of the different igneous rocks upon mineralization.
 Mines & Minerals, vol. 23, pp. 222-223, 2 figs., 1903.

42. Recent earth movements. An account of some movements in the Rocky Mountains as shown by effects on streams and mines.
 Mines & Minerals, vol. 23, p. 228, 1903.

43. Summit County placers of Colorado; a description of the great hydraulic works now nearing completion near Breckenridge.
 Mines & Minerals, vol. 23, pp. 241-244, 6 figs., 1903.
 Describes the general geology and the occurrence of placer gold.

44. Redcliff ore deposits. Not unlike in some respects to the ore deposits of the Mancos contact and the American Nettie at Ouray [Colorado].
 Mines & Minerals, vol. 23, pp. 252-253, 1903.
 Describes the occurrence of the gold ore deposits.

45. The Bellevue mining district of Idaho; the geological peculiarities of the veins as shown in the Minnie Moore and the Queen of the Hills mines.
 Mines & Minerals, vol. 23, pp. 271-272, 4 figs., 1903.

46. Secondary enrichment of ore deposits—its causes and effects—the conclusions of various authorities.
 Mines & Minerals, vol. 23, p. 347, 1903.

47. The Silver Lake mine, near Silverton, San Juan County, Colo. An instance of successful operation of a large mine at high altitude.
 Mines & Minerals, vol. 23, pp. 389-390, 2 figs., 1903.
 Includes notes on the occurrence and geologic relations of the silver-lead ores.

48. The present oil situation in Colorado; a review of the histories of the several regions, and the discoveries which have been made.
 Mines & Minerals, vol. 23, pp. 399-401, 2 figs., 1903.
 Includes an account of the geology of the Boulder oil field.

49. Geology and economics along the line of the new Moffat railway, to be built from Denver to Salt Lake City.
 Mines & Minerals, vol. 23, pp. 418-419, 1 fig., 1903.
 Gives observations on the geology of the region.

50. Creede mining camp. Valuable mines opened through the Nelson and Humphreys tunnels. A description of the Humphreys mill.
 Mines & Minerals, vol. 23, pp. 433-435, 2 figs., 1903.
 Describes briefly the general geology and occurrence of the silver-lead ores.

51. A trip to Chihuahua, old Mexico. A description of the Descubidoro mine, with some impressions of the country, the people, and the mines.
 Mines & Minerals, vol. 23, pp. 446-447, 3 figs., 1903.
 Contains observations on the geology and the occurrence of the silver and gold ores.

52. Zinc deposits: their geology and origin as shown in Wisconsin, Arkansas, Missouri, and Tennessee.
 Mines & Minerals, vol. 23, p. 468, 1903.

53. Peculiar mines and ore deposits of the Rosita and Silver Cliff mining district of Colorado. Ore deposits in a volcanic throat.
 Mines & Minerals, vol. 23, pp. 487-489, 4 figs., 1903.

54. Santa Eulalia mines. A trip to the ancient and very rich silver-lead mines in the Santa Eulalia Mountains, near Chihuahua, Mexico.
 Mines & Minerals, vol. 23, pp. 529-531, 5 figs., 1903.
 Describes the general geology and the occurrence of the silver-lead ore deposits.

55. A remarkable occurrence in the depths of a fissure vein.
 Mines & Minerals, vol. 23, p. 534, 1 fig., 1903.
 Describes the occurrence of a carbonized tree in a fissure vein of quartz.

Lakes (Arthur)—Continued.

56. Geologizing by the seaside. Illustrations of geological phenomena related to mining as shown in the sea cliffs and caves at La Jolia, near San Diego, Cal.

Mines & Minerals, vol. 23, pp. 543–545, 6 figs., 1903.

Describes observations upon the geology and geologic phenomena of the region.

57. The sea and mining. Illustrations shown at seacoast of manner of making and destruction of rocks by action of shellfish and erosion.

Mines & Minerals, vol. 24, pp. 12–14, figs. 1–6, 1903.

Describes erosion and sedimentation processes and the destructive action of boring seashells.

58. Mud volcanoes. Present-day illustrations of mudflows and formations resembling some older ones in which mineral deposits have been found.

Mines & Minerals, vol. 24, p. 33, 2 figs., 1903.

59. Bonanzas and pockets of ore. Some of the causes of their deposition and origin as illustrated in various mines.

Mines & Minerals, vol. 24, pp. 52–53, 3 figs., 1903.

Describes the formation of ore deposits.

60. Coal and asphalt deposits along the Moffat railway. Geological conditions shown which promise valuable deposits at workable depths.

Mines & Minerals, vol. 24, pp. 134–136, 4 figs., 1903.

Describes the general geology and the occurrence and character of coal and asphalt deposits.

61. Gypsum deposits in Colorado.

U. S. Geol. Surv., Bull. no. 223, pp. 86–88, 2 figs., 1904.

Describes character, occurrence, and economic development of the gypsum deposits of Colorado.

62. The coal fields of Colorado.

Colo. Sch. Mines, Bull., vol. 2, no. 2, pp. 11–23, 2 figs., 1904.

Describes the formation of the coal, the location, character, and geologic age of the coal fields and the character and occurrence of the coals.

63. Field notes concerning ore shoots and the influence of downhill pressure on the outcrop of veins.

Mines & Minerals, vol. 25, pp. 92–93, 6 figs., 1904.

64. Grand Encampment copper district of Wyoming. Some notes on the geology, and a description of some of the development work.

Mines & Minerals, vol. 25, pp. 200–201, 2 figs., 1904.

65. The Yampa coal fields. A description of the anthracite, bituminous, and lignite field traversed by the Moffatt Road in Routt County, Colorado.

Mines & Minerals, vol. 24, pp. 249–251, 4 figs., 1904.

Describes the occurrence, character, and geologic relations of the coal beds.

66. The Book Cliff coal mines. Coal seams near Grand Junction, Colorado, which exhibit interesting peculiarities in their locations and formations.

Mines & Minerals, vol. 24, pp. 289–291, 4 figs., 1904.

Describes the occurrence, character, geologic relations, and economic development of these coal beds.

67. A trip through Arizona. Interesting desert scenery and the relation it bears to the geology and mining interests of the region.

Mines & Minerals, vol. 24, pp. 356–358, 4 figs., 1904.

Gives observations on the physiography and geology of parts of Arizona.

68. Tonopah mining camp. Some notes on its location, the geological formations of the region, and the mines in operation.

Mines & Minerals, vol. 24, pp. 479–481, 1904.

69. Mines and scenery. A typical Nevada mining region situated in the bottom of an ancient dried up lake bed.

Mines & Minerals, vol. 24, pp. 552–553, 3 figs., 1904.

Gives observations upon the physiography and geology of a part of western Nevada.

Lakes (Arthur)—Continued.

70. Schists and slates as ore carriers.

Mg. & Sci. Press, vol. 88, pp. 161-162, 1904.

71. Ore in anticlinals, as at Bendigo, Australia, and Tombstone, Arizona.

Mg. & Sci. Press, vol. 88, p. 193, 1904.

72. The Lone Mountain district, near Tonopah, Nevada.

Mg. & Sci. Press, vol. 88, pp. 246-247, 6 figs., 1904.

Describes physiographic and geologic features of the region and the occurrence of silver-ore deposits.

73. Some of the ore deposits of Colorado.

Mg. & Sci. Press, vol. 88, pp. 377-378, 6 figs., 1904.

Describes the character and occurrence of some ore deposits.

74. Ore shoots and veins that do not come to the surface.

Mg. Rep., vol. 50, pp. 55-56, 2 figs., 1904.

Describes occurrences of ore bodies.

75. Organic remains in ore deposits.

Mg. Rep., vol. 50, pp. 113-114, 1904.

76. Ore deposition in the cement of rocks.

Mg. Rep., vol. 50, p. 140, 1904.

77. Volcanic craters and ore deposits.

Mg. Rep., vol. 50, pp. 216-217, 1904.

78. Shear zones or zones of impregnation vs. true quartz fissure veins.

Mg. Rep., vol. 50, pp. 295-296, 1904.

Discusses the character of veins containing ore deposits.

79. The Rocky Mountain coal fields.

Mg. Rep., vol. 51, pp. 5-7, 2 figs., 1905.

80. The coal fields of Colorado.

Mg. Rep., vol. 51, pp. 73-74, 3 figs., 1905.

81. The anthracite situation in Colorado.

Mg. Rep., vol. 51, pp. 98-99, 1905.

82. Coal along the eastern foothills.

Mg. Rep., vol. 51, pp. 127-128, 1905.

83. The geology and coal deposits of the Spanish Peaks district.

Mg. Rep., vol. 51, pp. 184-185, 4 figs., 1905.

84. The La Plata or southwestern Colorado coal field.

Mg. Rep., vol. 51, pp. 212-213, 2 figs., 1905.

85. Coals of the southern Colorado or the Walsenburg and Trinidad region.

Mg. Rep., vol. 51, pp. 234-235, 1 fig., 1905.

86. Disturbances and other peculiarities of the northeastern coal field of Colorado between Ralston Creek and Boulder.

Mg. Rep., vol. 51, pp. 326-328, 3 figs., 1905.

87. The Grand River coal field [Colorado].

Mg. Rep., vol. 51, pp. 379-381, 2 figs., 1905.

88. The Yampa coal field of Routt County, Colorado.

Mg. Rep., vol. 51, pp. 404-405, 2 figs., 1905.

89. The South Park coal field [Colorado].

Mg. Rep., vol. 51, pp. 428-429, 2 figs., 1905.

90. Geology of the hot springs of Colorado and speculations as to their origin and heat.

Mg. Rep., vol. 51, pp. 479-481, 1905.

91. Sketch of the economic resources of the foothills of the front range of Colorado.

Mg. Rep., vol. 51, pp. 522-524, 1 fig., 1905.

Lakes (Arthur)—Continued.

92. Faults with special reference to coal and metal mining.
    Mg. Rep., vol. 52, pp. 6-7, 4 figs., 1905.

93. Fault phenomena. Signs of faulting below ground.
    Mg. Rep., vol. 52, pp. 58-59, 5 figs., 1905.

94. Fault phenomena. Practical consideration of faults in mining.
    Mg. Rep., vol. 52, pp. 85-86, 2 figs., 1905.

95. Examples of Colorado faults, both old and recent. Some practical suggestions.
    Mg. Rep., vol. 52, pp. 166-167, 3 figs., 1905.

96. Peat and its relation to coal.
    Mg. Rep., vol. 52, pp. 208-209, 4 figs., 1905.

97. The hot and mineral springs of Routt County and Middle Park, Colorado.
    Mg. Rep., vol. 52, pp. 438-439, 2 figs., 1905.

98. Oil-impregnated volcanic dikes in Colorado.
    Mines & Minerals, vol. 25, p. 394, 3 figs., 1905.

99. The Occidental and other coal mines of Huerfano County, Colorado. A description of the geology and development of the region.
    Mines & Minerals, vol. 25, pp. 473-474, 3 figs., 1905.

100. Flints and other hard rocks as material for tube mills.
    Mines & Minerals, vol. 26, pp. 53-54, 1905.
    Contains notes on the occurrence and origin of flint nodules.

101. Organic remains in ore deposits.
    Eng. & Mg. Jour., vol. 79, pp. 1226-1227, 1905.

102. Igneous rocks in ore deposition.
    Eng. & Mg. Jour., vol. 80, p. 196, 1905.

103. Geology of the hot springs of Colorado and speculations as to their origin and heat.
    Colo. Sci. Soc., Proc., vol. 8, pp. 31-37, 1905.

104. Geology of western ore deposits. (New edition entirely rewritten and enlarged, with 300 illustrations.)
    Denver, Colorado, The Kendrick Book and Stationery Company, 1905. 436 pp.

Lamb (George F.).

1. Field geology in the Ohio State University.
    Am. Geol., vol. 36, pp. 185-197, 1905.
    Contains brief geological notes upon various Paleozoic formations in Ohio.

Lambe (Lawrence M.).

1. Notes on a turtle from the Cretaceous rocks of Alberta [Canada].
    Ottawa Nat., vol. 15, pp. 63-67, 4 pls., 1902.

2. A revision of the genera and species of Canadian Paleozoic corals: the Madreporaria Aporosa and the Madreporaria Rugosa.
    Can. Geol. Surv., Contr. to Can. Paleont., vol. 4, pt. 2, pp. 97-197, 18 pls., 1901.

3. New genera and species from the Belly River series (Mid-Cretaceous).
    Can. Geol. Surv., Contr. to Can. Paleont., vol. 3, pt. 2, pp. 25-81, 21 pls., 1902.

4. Red Deer River, Alberta [Canada].
    Can. Geol. Surv., Summ. Rept. for 1901, pp. [illegible], 1902.
    Discusses the author's field work at this locality.

5. On Trionyx foveatus, Leidy, and Trionyx vagans, Cope, from the Cretaceous rocks of Alberta [Canada].
    Can. Geol. Surv., Summ. Rept. for 1902, pp. [illegible], 4 pls., 1902.
    Describes the characters and occurrence of these two Chelonia.

6. The lower jaw of Dryptosaurus incrassatus (Cope).
    Ottawa Nat., vol. [illegible], pp. [illegible], 3 pls., 1905.

Lambe (Lawrence M.)—Continued.

7. Stegoceras and Stereocephalus.

Science, new ser., vol. 18, p. 60, 1903.

8. On Dryptosaurus incrassatus (Cope), from the Edmonton series of the Northwest Territory.

Can. Geol. Surv., Contr. to Can. Paleont., vol. 3, pt. 3, pp. 1-27, 8 pls., 2 figs., 1904.

9. The grasping power of the manus of Ornithomimus altus, Lambe.

Ottawa Nat., vol. 18, pp. 33-36, 2 pls., 1904. Abstract: Science, new ser., vol. 19, p. 254, 1904.

10. On the squamoso-parietal crest of two species of horned dinosaurs from the Cretaceous of Alberta.

Ottawa Nat., vol. 18, pp. 81-84, 2 pls., 1904.

11. On the squamoso-parietal crest of the horned dinosaurs Centrosaurus apertus and Monoclonius canadensis from the Cretaceous of Alberta.

Can. Roy. Soc., Trans., 2d ser., vol. 10, sect. 4, pp. 3-12, 2 pls., 1904.

12. The progress of vertebrate paleontology in Canada.

Can. Roy. Soc., Trans., 2d ser., vol. 10, sect. 4, pp. 13-56, 1904.

Gives a review of work upon vertebrate fossils discovered in Canada, with a list of Canadian species occurring in each of the systems of the geological scale, and a list of papers containing references to these species.

13. Vertebrate paleontology.

Can. Geol. Surv., Summ. Rept. for 1903, pp. 205-207, 1904.

Reviews the work upon vertebrate paleontology during 1903 of the Geological Survey of Canada.

14. On the tooth-structure of Mesophippus westoni (Cope).

Am. Geol., vol. 35, pp. 243-245, 1 pl., 1905.

15. Vertebrate paleontology.

Can. Geol. Surv., Summ. Rept. for 1904, pp. 362-371, 1905.

Reviews of the work on vertebrate paleontology in 1904 of the Geological Survey of Canada.

16. Fossil horses of the Oligocene of the Cypress hills, Assiniboia.

Can. Roy. Soc., Trans., 2d ser., vol. 11, sect. 4, pp. 43-52, 1 pl., 1905.

17. A new species of Hyracodon (H. priscidens) from the Oligocene of the Cypress hills, Assiniboia.

Can. Roy. Soc., Trans., 2d ser., vol. 11, sect. 4, pp. 37-42, 1 pl., 1905.

Lambert (Avery E.).

1. Description of Dalmanites lunatus.

Geol. Soc. Am., Bull., vol. 15, pp. 480-482, 1 pl., 1904.

2. A trilobite (Dalmanites lunatus) from Littleton, N. H., with notes on other fossils from the same locality.

In the Geology of Littleton, by C. H. Hitchcock, Cambridge, U. S. A., 1905, pp. 33-38, 2 pls.

Landes (Henry).

1. An outline of the geology of Washington.

Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 11-35, 5 pls., 1902.

Discusses the topography and geologic formations found in the State of Washington.

2. The nonmetalliferous resources of Washington, except coal.

Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 161-213, 5 pls., 1902. Abstract: Stone, vol. 24, pp. 521-525; vol. 25, pp. 24-30, 125-127, 1902.

3. The coal deposits of Washington.

Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 257-281, 6 pls., 1902.

Discusses the geologic position and distribution of the coals of the State of Washington.

4. Preliminary report on the underground waters of Washington.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 111, 85 pp., 1 pl., 1905.

5. The clay deposits of Washington.

U. S. Geol. Surv., Bull. no. 260, pp. 550-558, 1905.

Landes (Henry)—Continued.

6. Field notes on Mt. Rainier [Washington].

Mazama, vol. 2, pp. 220-223, 1905.
Gives notes on the general geology and the geologic structure of Mt. Rainier.

Landes (Henry) and **Ruddy** (C. A.).

1. Coal deposits of Washington.

Wash. Geol. Surv., vol. 2, Ann. Rept. for 1902, pp. 165-277, 1 pl., 46 figs., 1903.
Describes character, geographic distribution, and geologic relations of the coal beds of Washington, the occurrence, thickness, and value of the coal seams, and constitution and fuel value of the coals.

Landes (Henry), **Thyng** (William S.), **Lyon** (D. A.) and **Roberts** (Milnor).

1. The metalliferous resources of Washington, except iron.

Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 39-157, 4 pls., 1902.

Lane (Alfred C.).

1. Michigan limestones and their uses.

Eng. & Mg. Jour., vol. 71, pp. 662-663, 693-694, and 725, 1 fig., 1901.
Describes the occurrence, character, and uses of the limestones derived from the several geologic horizons in Michigan.

2. The pre-Glacial surface deposits of Lower Michigan.

Abstract: Science, new ser., vol. 14, pp. 788-799, 1901.
Describes briefly the drainage systems and the character of the bed-rock material.

3. Annual report of the State geologist [Michigan].

Mich. Miner, vol. 3, pp. 13-22, 1901.
Summarizes the geological work done in Michigan.

4. Suggestion from the State geologist.

Mich. Miner, vol. 3, no. 10, p. 9, 1901.
Proposes to substitute the term Saginaw for Jackson as applied to coal beds in Michigan, and Antrim for St. Clair as applied to Upper Devonian shales of Thunder Bay and Grand Traverse Bay regions.

5. The economic geology of Michigan in its relation to the business world.

Mich. Miner, vol. 4, no. 1, pp. 9-15, 1901.

6. Asphalt in Delta County, Michigan.

Eng. & Mg. Jour., vol. 73, p. 50, 1902.
Gives a section of the Ordovician strata, and describes the character of the asphalt material.

7. Subsurface geology [Alcona County, Michigan].

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 64-76, geol. map and sections, 1902.
Describes the character of the Carboniferous and Devonian rocks as exhibited by the well records and the possible occurrence of oil and gas.

8. Economic geology [of Michigan].

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 121-137, 1902.

9. Limestones [of Michigan].

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 141-159, 1902.
Describes the character, composition, and occurrence of limestones in Michigan.

10. Deep wells and prospects for oil and gas [Michigan].

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 211-237, 1 pl., 1902.
Gives notes on well records in various parts of the State.

11. Geological map of Michigan.

Mich. Geol. Surv., Ann. Rept. for 1901, opp. p. 224, 1902.

12. Salt [Michigan].

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 241-242, 1902.
Contains brief notes on well records and analyses of the brines.

13. Geothermal gradient.

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 244-251, 1902.
Contains notes on surface and underground temperatures.

Lane (Alfred C.)—Continued.

14. Coal of Michigan: its mode of occurrence and quality.

Mich. Geol. Surv., vol. 8, pt. 2, pp. 1-232, 9 pls., 9 figs., map, 1902.
Describes the geologic occurrence, composition, and mining of coal in the Lower Peninsula of Michigan.

15. The northern interior coal field.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 307-331, 2 pls., 5 figs., 1902.
Describes extent, geologic relations and structure of the field, the character and occurrence of the coal beds, the properties, composition, and development of the coal.

16. Variation of geothermal gradient in Michigan.

Abstract: Science, new ser., vol. 15, p. 88, 1902.

17. Queneau on size of grain in igneous rocks.

Am. Jour. Sci., 4th ser., vol. 14, pp. 393-396, 1902.

18. Recent work of the Geological Survey [Michigan].

Mich. Acad. Sci., 3d Rept., pp. 38-39, 1902.

19. Report on certain lands leased for oil and gas near Cannel City, Morgan County, Kentucky.

Lansing, 12 pp., 1902. (Private publication.)
Gives an account of the geologic structure of the region.

20. Notes on the origin of Michigan bog limes.

Mich. Geol. Surv., vol. 8, pt. 3, pp. 199-223, 1 pl., 5 figs., 1903.

21. List of localities and mills [manufacturing Portland cement].

Mich. Geol. Surv., vol. 8, pt. 3, pp. 224-342, 1903.
Includes notes on the occurrence of marls and clays and analyses of materials used in the manufacture of cements.

22. Studies of the grain of igneous intrusives.

Geol. Soc. Am., Bull., vol. 14, pp. 369-384, 5 pls., 1903.
Discusses the grain of augite in a group of chemically similar diabases.

23. Porphyritic appearance of rocks.

Geol. Soc. Am., Bull., vol. 14, pp. 385-406, 1903.
Discusses the origin of variation in texture of igneous rocks as the margin is approached.

24. Annual report of the Geological Survey of Michigan.

Mich. Miner, vol. 5, no. 2, pp. 16-26, 1903; reprinted as separate, 26 pp., 1903.
Discusses the occurrence and utilization of various economic products found in Michigan.

25. Geological changes now going on.

Mich. Eng., pp. 102-105, 1903.
Describes erosion on lake shores and changes in elevation.

26. The economic geology of Michigan.

Abstract: Eng. & Mg. Jour., vol. 75, p. 152, 1903; Science, new ser., vol. 17, p. 218, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

27. Variation of geothermal gradient in Michigan.

Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 528-529, 1903.
Presents data regarding underground variations of temperature.

28. The theory of copper deposition.

Mich. Miner, vol. 6, no. 2, pp. 9-11, no. 3, pp. 9-11, 1904. Am. Geol., vol. 34, pp. 297-309, 1 fig., 1904.
Discusses the theory of copper deposition with especial reference to the copper-ore deposits of the Lake Superior region.

29. The science of raw materials.

Mich. Miner, vol. 6, no. 4, pp. 9-11, 1904.
Discusses scope and utility of economic geology.

30. Building and road materials.

Mich. Miner, vol. 6, no. 5, pp. 9-12, no. 6, pp. 9-11, 1904.
Gives notes on the occurrence, character, and use of materials for Portland cement and cement-brick manufacture, and road making.

Lane (Alfred C.)—Continued.

31. Recent explorations for oil and gas. Advance sheets from the Annual Report of State geologist, 1904 [Michigan].

Mich. Miner, vol. 6, no. 8, pp. 9–12, no. 9, pp. 9–13, 1904.
Includes record of borings and discussion of the strata passed through.

32. The rôle of possible eutectics in rock magmas.

Jour. Geol., vol. 12, pp. 83–93, 1 fig., 1904.
Discusses the quantitative classification of igneous rocks.

33. Magnetic phenomena around deep borings.

Mich. Acad. Sci., 4th Rept., pp. 166–167, 1904.

34. Our underground wealth. Michigan clay, shales, and paving materials.

The Gateway, vol. 1, no. 6, pp. 49–51, 1904.
Discusses the occurrence and utilization of clays and shales for paving materials.

35. Gold near Lake Superior.

The Gateway, vol. 3, no. 3, pp. 30–32, 1904.
Gives observations upon the geology along the international boundary and the occurrence and mining of gold ores in Ontario and Michigan.

36. Historical review of the geology of Michigan.

Mich. Acad. Sci., 5th Ann. Rept., pp. 184–196, 1904.
Gives a review of the investigations upon the geology of Michigan, a general outline of the geological structure and stratigraphy of the State, and a list of publications bearing upon the geology of the State.

37. The coarseness of igneous rocks and its meaning.

Am. Geol., vol. 35, pp. 65–72, 1 pl., 1905.
Discusses variation in size of grain of igneous rocks and its causes, and points out applications which may be made of the facts stated.

38. Underground waters of eastern United States: Lower Michigan.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 242–247, 2 figs., 1905.
Describes briefly the general geology, the underground water supplies, and the geologic horizons from which they are obtained.

39. Fifth annual report of the State geologist [Michigan].

Mich. Geol. Surv., Ann. Rept. for 1903, 342 pp., 6 pls., 1905.

40. Waters of the Upper Peninsula of Michigan.

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 111–167, 1905.
Includes records of wells and a discussion of the strata passed through.

41. Limestones [of Michigan].

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 169–174, 1905.

42. Transmission of heat into the earth.

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 195–204, 1905; Mich. Engineer, pp. 229–245, 1904.

43. Grain of rock.

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 205–237, 6 figs., 1905.

44. The theory of copper deposition.

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 239–249, 1905.

45. The Tamarack Mine cross section and the Keweenawan lodes.

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 251–270, 1905.
Describes petrographic characters of rocks in these lodes.

46. Deep borings for oil and gas [in Michigan].

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 271–294, 1905.

47. Comment on the "Report of the special committee on the Lake Superior region."

Jour. Geol., vol. 13, pp. 457–461, 1905.

48. Sixth annual report of the State geologist [of Michigan], for 1904.

Mich. Geol. Surv., Ann. Rept. for 1904, pp. 113–168, 1 pl., 1905; Mich. Miner, vol. 7, no. 2, pp. 12–15; no. 3, pp. 12–18; no. 4, pp. 9–12, 1905.
Chiefly administrative, but includes various data relating to the geology of Michigan. Includes and comments upon the report of the special committee for the Lake Superior region (see *Van Hise and others*, 1).

Langley (S. P.).

1. Powell as a man.

Wash. Acad. Sci., Proc., vol. 5, pp. 127-130, 1903.

2. The greatest flying creature.

Sci. Am. Suppl., vol. 55, pp. 22644-22645, illus., 1903.
Discusses flight in the Ornithostoma, introducing a paper by F. A. Lucas with the same title.

Langworthy (A. E.).

1. The Atchison [Kansas] diamond-drill prospect hole.

Kans. Acad. Sci., Trans., vol. 17, pp. 45-52, 1901.
Gives record of boring, discusses strata penetrated, and includes analyses of coal.

Lasswitz (Rudolf).

1. Die Kreide-Ammoniten von Texas. (Collectio F. Roemer.)

Geol. und Pal. Abh. (Koken), N. F., Bd. 6, Heft 4, 40 pp., 8 pls., 1901.
Gives systematic descriptions of Cretaceous ammonites from Texas, a graphic section of strata at Austin, and correlation tables of Cretaceous formations.

Launay (L. de).

1. [Discussion of "The origin of ore-deposits."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 947-951, 1902.

Lawson (Andrew C.).

1. A feldspar-corundum rock from Plumas County, California.

Abstract: Jour. Geol., vol. 9, p. 78, 1901; Geol. Soc. Am., Bull., vol. 12, pp. 501-502, 1901.
Gives chemical analysis of the feldspar.

2. The drainage features of California.

Abstract: Jour. Geol., vol. 9, pp. 77-78, 1901; Geol. Soc. Am., Bull., vol. 12, p. 495, 1901.
Discusses the causes which have determined the drainage features of the Coast, Klamath, and Sierra Nevada ranges.

3. Joseph Le Conte.

Science, new ser., vol. 14, pp. 273-277, 1 pl., 1901.
Gives a sketch of his life and work.

4. The Eparchæan interval: a criticism of the use of the term Algonkian.

Univ. Cal., Dept. Geol., Bull., vol. 3, pp. 51-62, 1902.
Discusses the application of the terms Archæan and Algonkian, the correlation of their formations and defines the term Eparchæan interval.

5. Third annual meeting of the Cordilleran section of the Geological Society of America [Proceedings and abstracts of papers].

Science, new ser., vol. 15, pp. 410-417, 1902.

6. A geological section of the middle Coast ranges of California.

Abstract: Science, new ser., vol. 15, p. 415, 1902.
Gives a table showing succession and character of geologic formations in the Coast ranges in the vicinity of the Bay of San Francisco.

7. On an orbicular gabbro from San Diego County, California.

Abstract: Science, new ser., vol. 15, p. 415, 1902.

8. Plumasite, an oligoclase-corundum rock.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 219-229, 1903.
Discusses occurrence of corundiferous rocks, and describes the occurrence and characters of this corundum rock discovered on Spanish Peak in Plumas County, California.

9. Geological section of the middle Coast ranges of California.

Abstract: Geol. Soc. Am., Bull., vol. 13, pp. 544-545, 1903.
In a table gives the names of the formations and their lithologic characters and thickness.

10. The geomorphogeny of the upper Kern basin.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 291-376, 15 pls., 1904.
Describes the occurrence and general petrographic characters of the rocks and the glaciation and physiographic features of the region, and discussess the origin of the latter.

Lawson (Andrew C.)—Continued.

11. The orbicular gabbro at Dehesa, San Diego Co., California.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 383–396, 1 pl., 1904.

Describes the general geology of the region, the occurrence of the orbicular gabbro and its petrographic characters and composition.

12. The relation of geology to the mining industry.

Mg. & Sci. Press, vol. 91, p. 395, 1905.

Lawson (Andrew C.) and **Palache** (Charles).

1. The Berkeley Hills [California]. A detail of Coast Range geology.

Univ. Cal., Dept Geol., Bull., vol. 2, pp. 349–450, 8 pls., map, 1902.

Describes the character, occurrence, and relations of the formations of the region, erosion intervals, faults, and the microscopic characters of the volcanic rocks.

Lawson (Publius V.).

1. Preliminary notice of the forest beds of the lower Fox [River, Wisconsin].

Wis. Nat. Hist. Soc., Bull., vol. 2, pp. 170–173, 1902.

Lay (H. C.).

1. Recent geological phenomena in the "Telluride quadrangle" of the U. S. Geological Survey in Colorado.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 558–567, 1902.

Presents the author's observations on the glacial phenomena, earth movements, and underground waters of the region.

Lazo (Augustín M.) and **Ordónez** (Ezequiel).

1. Las canteras de San Lorenzo Totolinga y Echagaray [México].

Soc. Geol. Mex., Bol., t. 1, pp. 25–34, 2 pls., 1905.

Describes the character, occurrence, and geologic relations of building stone.

Leach (J. C.).

1. Report of the State natural gas supervisor.

Ind., Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 420–444, 1903.

2. Annual report of the State natural gas supervisor.

Ind., Dept. Geol. & Nat. Res., 27th Ann. Rept., pp. 477–493, 1903.

Leach (W. W.).

1. Crows Nest coal fields.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 67–79, 1902.

Describes the occurrence of coal seams of Cretaceous age in this area.

2. The Blairmore-Frank coal fields.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 167–179, 1903.

Describes the geologic structure of the area.

Le Conte (Joseph).

1. The origin of transverse mountain valleys and some glacial phenomena in those of the Sierra Nevada.

[Cal.] Univ. Chronicle, vol. 1, pp. 479–497, 14 figs., 1898.

Describes the geologic history of the Sierra Nevada, the origin of certain mountain valleys, and the glacial phenomena in these valleys.

2. A century of geology.

Smith Inst., Ann. Rept. for 1900, pp. 265–287, 1901.

3. The autobiography of Joseph Le Conte, edited by William Dallam Armes.

New York, D. Appleton and Company, 1903. xvii, 337 pp.

4. Elements of geology: a text-book for colleges and for the general reader. Revised and partly rewritten by Herman Le Roy Fairchild. Fifth edition.

New York, D. Appleton and Company, 1903. xii, 667 pp., 1002 figs.

Le Couppey de la Forest (Max).

1. Quelques grottes des Etats-unis d'Amerique.

Spelunca, t. 35, no. 35, pp. 3 (117)-21 (135), 2 figs., 1904.

Describes Mammoth and Colossal caves in Kentucky, Wyandotte Cave in Indiana, and Wind Cave and Grand Cavern in Colorado. Includes some account of the Carboniferous formations in which the caves occur.

Ledoux (A. R.).

1. Notes on the Oregon nickel prospects.

Can. Mg. Rev., vol. 20, pp. 84-85, 1901; Can. Mg. Inst. Jour., vol. 4, pp. 184-189, 1901.
Describes the geological relations of the ore bodies and gives a chemical analysis of the ore.

2. The production of copper in the Boundary district, B. C.

Can. Mg. Inst. Jour., vol. 5, pp. 171-177, 1902; Mg. & Sci. Press, vol. 84, p. 307, 1902.
Describes the character and occurrence of the ores.

Lee (Harry A.).

1. Colorado: Report of the State Bureau of Mines, Denver, U. S. A. For the years 1901-2.

Denver, 1903. 310 pp., map.
Gives a history of precious metal mining by counties in Colorado, with notes upon the geologic occurrence, production, etc., of precious metals and other minerals.

Lee (Leslie A.).

1. The mineral resources of Maine.

Am. Mg. Cong., 7th Ann. Sess., Rept. of Proc., pp. 227-232, 1905.

Lee (Willis Thomas).

1. The Morrison formation of southwestern Colorado.

Jour. Geol., vol. 9, pp. 343-352, 4 figs., 1901.
Describes the character and occurrence of the Jurassic and Cretaceous strata of the region, and discusses the stratigraphic and paleontologic evidences of the age of the Morrison formation.

2. The areal geology of the Castle Rock region, Colorado.

Am. Geol., vol. 29, pp. 96-110, 1 pl., 1902.
Describes the occurrence and character of the sedimentary and igneous rocks and th geologic structure of the region.

3. The Morrison shales of southern Colorado and northern New Mexico.

Jour. Geol., vol. 10, pp. 36-58, 7 figs., 1902.
Describes the general structure of the region, gives detailed sections and discusses the age and equivalency of the shales.

4. Canyons of southeastern Colorado.

Jour. Geog., vol. 1, pp. 357-370, 12 figs., 1902.
Includes sections of the strata cut by some of the canyons described.

5. Note on the Carboniferous of the Sangre de Cristo Range, Colorado.

Jour. Geol., vol. 10, pp. 393-396, 1902.
Gives a detailed section in the Sangre de Cristo Range and a list of the fossils collected.

6. The canyons of northeastern New Mexico.

Jour. Geog., vol. 2, pp. 63-82, 14 figs., 1903.
Includes sections of the strata cut by some of the canyons described and gives a general account of the formations exposed.

7. Age of the Atlantosaurus beds.

Abstract: Science, new ser., vol. 17, pp. 292-293, 1903; Geol. Soc. Am., Bull., vol. 14, pp. 531-532, 1904.

8. The underground waters of Gila Valley, Arizona.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 104, 68 pp., 5 pls., 9 figs., 1904.
Includes sections of wells showing thickness and character of strata passed through.

9. Underground waters of Salt River Valley, Arizona.

U. S. Geol. Surv., Water Supply and Irrigation Paper no. 136, 196 pp., 23 pls., 25 figs., 1905.
Includes an account of the geology and physiography of the region

10. Note on the glacier of Mount Lyell, California.

Jour. Geol., vol. 13, pp. 358-362, 2 figs., 1905.

Leffingwell (E. D. K.), **Capps** (S. R.) and.

1. Pleistocene geology of the Sawatch Range, near Leadville, Colo.

See **Capps** (S. R.) and *Leffingwell (E. D. K.)*, 1.

Leffmann (Henry).

1. The microscopic structure of building stones.

Engrs. Club Phila., Proc., vol. 22, pp. 327-342, illus., 1905.

Leith (Charles Kenneth).

1. Summaries of current North American pre-Cambrian literature.

Jour. Geol., vol. 9, pp. 79-87 and 441-458, 1901.

2. Geology of the Mesabi Iron region.

Eng. & Mg. Jour., vol. 73, p. 277, 1902; Science, new ser., vol. 15, p. 351, 1902.

Abstract of paper read before the Geological Society of Washington. Discusses the stratigraphic geology and the origin of the ores.

3. Pre-Cambrian summaries for 1901.

Jour. Geol., vol. 10, pp. 891-913, 1902.

4. The Mesabi iron-bearing district of Minnesota.

U. S. Geol. Surv., Mon., vol. 43, 316 pp., 33 pls., 12 figs., 1903.

Describes geography and topography, gives a brief history of the opening and development of the district, and reviews the literature bearing on the geology of the region. Describes the lithologic character, occurrence, structure, and geologic relations of Archean, Huronian, Keweenawan, Cretaceous, and Quaternary deposits and discusses the geologic history of the region, the correlation of the formations, the distribution, character, and geologic occurrence of the iron ores, their petrographic relations to adjacent rocks and origin, and the development of the mining industry of the district.

5. Geologic work in the Lake Superior iron district during 1902.

U. S. Geol. Surv., Bull. no. 213, pp. 247-250, 1903.

Gives observations on the character and occurrence of the iron ores.

6. Moose Mountain Iron Range [Ontario].

Ont. Bur. Mines, [12th] Rept., pp. 318-321, 1 fig., 1903.

Describes geologic features of the range and discusses the origin of the ore.

7. Summaries of pre-Cambrian literature for 1902-1903.

Jour. Geol., vol. 12, pp. 52-62, 1903.

8. A comparison of the origin and development of the iron ores of the Mesabi and Gogebic iron ranges.

Lake Sup. Mg. Inst., Proc. for 1902, vol. 8, pp. 75-81 [1903].

9. Summaries of pre-Cambrian literature for 1902-1903.

Jour. Geol., vol. 12, pp. 52-62, 161-176, 1904.

10. The Lake Superior iron region during 1903.

U. S. Geol. Surv., Bull. no. 225, pp. 215-220, 1904.

Describes the geologic occurrence of the iron-ore deposits in the different districts of the Lake Superior iron region.

11. Iron ores in southern Utah.

U. S. Geol. Surv., Bull. no. 225, pp. 229-237, 1904.

Describes distribution, geologic relations, and character of the iron ores and discusses their origin.

12. Lake Superior iron region in 1903.

Mg. World, vol. 21, pp. 198-200, 3 figs., 1904.

Includes observations on the general geology and the occurrence and character of the iron-ore deposits.

13. Rock cleavage.

U. S. Geol. Surv., Bull. no. 239, 216 pp., 27 pls., 1905.

14. A summary of Lake Superior geology with special reference to recent studies of the iron-bearing series.

Am. Inst. Mg. Engrs., Bi-mo. Bull. no. 3, pp. 453-507, 4 figs., 1905.

Describes the geology of the Lake Superior iron-bearing and copper-bearing series and the occurrence, relations, and origin of the iron ores.

15. Genesis of Lake Superior iron ores.

Econ. Geol., vol. 1, pp. 47-66, 1905.

Leith (C. K), **Van Hise** (C. R.) and.

1. The Mesabi district.

See **Van Hise** (C. R.), 2.

Leonard (Arthur Gray).

1. The basic rocks of northwestern Maryland and their relation to the granite.

Am. Geol., vol. 28, pp. 135-176, 5 pls., 1901.

Describes the geologic occurrence and relations and discusses the origin of the various facies.

2. Report of assistant State geologist [Iowa].

Iowa Geol. Surv., vol 12, Ann. Rept. for 1901, pp. 28-32. 1902.

Gives record of a boring at Clarinda, Iowa.

3. Geology of Wapello County [Iowa].

Iowa Geol. Surv., vol. 12, Ann. Rept. for 1901, pp. 441-499, 1 pl., 15 figs., geol. map, 1902.

Describes physiographic features, geologic structure, and occurrence and utilization of economic products.

4. Topographic features and geological formations of North Dakota.

N. Dak. Geol. Surv., 3d Biennial Report, pp. 127-177. 6 pls.. 1904.

Lerch (Otto).

1. A preliminary report upon the hills of Louisiana, north of the Vicksburg, Shreveport and Pacific Railroad.

La. State Experiment Stations; Geol. & Agric., pt. 1, pp. 1-52, 6 figs., 2 pls. [1892?].

Describes topography, drainage, and geology of the area and discusses its economic resources.

2. A preliminary report upon the hills of Louisiana, south of the Vicksburg, Shreveport and Pacific Railroad, to Alexandria, Louisiana.

La. State Experiment Stations; Geol. & Agric., pt. 2, pp. 53-158, 26 figs., 2 pls. (sections) [1893?].

Describes topography, drainage, and geology of the area and discusses its economic resources.

LeRoy (Osmond Edgar).

1. Geology of Rigaud Mountain, Canada.

Geol. Soc. Am., Bull., vol. 12, pp. 377-394, pls. 33-34, 1901; McGill Univ. Papers from Dept. Geol. no. 13, 1902.

Describes the topographic and general geologic features of the region and the microscopic characters of the igneous rocks.

LeRoy (Osmond E.), **Adams** (F. D.) and.

1. The artesian and other deep wells on the Island of Montreal.

See **Adams** (F. D.) and **LeRoy** (O. E.), 1.

Letson (Elizabeth J.).

1. Post-Pliocene fossils of the Niagara River gravels.

Buffalo Soc. Nat. Sci., Bull., vol. 7, pp. 238-252, 30 figs., 1901; N. Y. State Mus., 54th Ann. Rept., vol. 4, 1902.

Leverett (Frank).

1. Soils of Illinois.

Ill. Bd. of World's Fair Commissioners, Rept., pp. 77-92, 1 pl., 1895.

2. Old channels of the Mississippi in southeastern Iowa.

Annals of Iowa, 3d ser., vol. 5, pp. 38-51, 1901.

Describes the extent and history of the glaciation, the old drainage of the upper Mississippi, and the changes produced by the glaciation.

3. Report on the surface geology of Alcona County, Michigan.

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 35-64, 2 pls., geol. map, 1902.

Describes the physiography, glacial deposits and lake history, and the occurrence of marl, clay, and water powers.

4. Glacial formations and drainage features of the Erie and Ohio basins.

U. S. Geol. Surv., Mon., vol. 41, 802 pp., 26 pls., 8 figs., 1902.

Describes physical features, present and former drainage, character, and occurrence of drift deposits and the glacial history of the region.

5. Summary of the literature of North American Pleistocene geology, 1901 and 1902.

Jour. Geol., vol. 11, pp. 420-428, 498-515, 587-611, 1903.

Leverett (Frank)—Continued.

6. Glacial features of Lower Michigan.

Abstract: Science, new ser., vol. 17, p. 224, 1903.

7. The loess and its distribution.

Am. Geol., vol. 33, pp. 56–57, 1904.

8. Review of the Glacial geology of the southern peninsula of Michigan.

Mich. Acad. Sci., 6th Rept., pp. 103–110, 1904.
Discusses the physical features of the southern peninsula, the possible extension of the Keewatin ice field over Michigan, evidences in Michigan of successive advances of the Labrador ice field, the location of the ice margin, structure of the drift in Michigan, Glacial lakes, and origin of the Great Lakes, and gives a bibliography.

9. Glacial geology of the Grand Rapids area [Michigan].

Mich. Geol. Surv., vol. 9, pt. 2, pp. 56–59, 1904.

10. Glacial gravels [of the Kittanning quadrangle, Pennsylvania].

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 115, 1904.

11. Underground waters of eastern United States: Illinois.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 248–257, 3 figs., 1905.
Gives a brief account of the geology, and describes the water-producing qualities of the various geologic formations of the State, and localities favorable for artesian wells.

12. Underground waters of eastern United States: Indiana.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 258–264, 2 pls., 1905.
Describes briefly the geologic column of Indiana, the principal water-bearing horizons, and the mineral waters.

13. Underground waters of eastern United States: Ohio.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 265–270, 1905.
Describes the underground water supplies with reference to the geologic horizons.

14. Drumlins of the Grand Traverse region [Michigan].

Abstract: Science, new ser., vol. 21, p. 220, 1905.

Levison (W. G.).

1. Notes on fluorescent gems.

Am. Geol., vol. 33, pp. 57–58, 1904.

Lewis (J. V.), **Pratt** (J. H.) and.

1. Corundum and the peridotites of western North Carolina.

See **Pratt** (J. H.) and **Lewis** (J. V.), 1.

L'Hame (Wm. E.).

1. Thunder Mountain, Idaho.

Mines and Minerals, vol. 21, p. 558, 1901.
Describes briefly occurrence of gold in the region.

2. Thunder Mountain district [Idaho]. A description ot the peculiarities of geology and situation of the various regions comprised in the district.

Mines and Minerals, vol. 24, pp. 207–209, 1903.
Describes the general geology and the occurrence of gold ore deposits.

Liddell (Charles A.), **Parsons** (H. F.) and.

1. The coal and mineral resources of Routt County [Colorado].

See **Parsons** (H. F.) and **Liddell** (C. A.), 1.

Lindgren (Waldemar).

1. Metasomatic processes in fissure veins.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 578–692, 30 figs., 1901. Abstract: Am. Jour, Sci., 4th ser., vol. 11, pp. 243–244, 1901.
Discusses the general features of the changes in rocks contiguous to ore-bearing fissures, and the minerals developed by metasomatic processes in fissure veins. Gives an account of fissure veins in various mining regions classified according to metasomatic processes.

2. Trias in northeastern Oregon.

Abstract. Science, new ser., vol. 13, pp. 270–271, 1901.
Describes briefly character and distribution.

Lindgren (Waldemar)—Continued.

3. Rare minerals in gold quartz veins of eastern Oregon.

Mg. and Sci. Press, vol. 82, p. 252, 1901.
Gives a chemical analysis of roscoelite and notes on other minerals.

4. The gold belt of the Blue Mountains of Oregon.

U. S. Geol. Surv., 22d Ann. Rept., pt. 2, pp. 551-776, 16 pls., 10 figs., 1901.
Describes topography and drainage, general geologic features, the character and occurrence or Archæan, Paleozoic, Triassic, Neocene, and Quaternary strata and intrusive rocks, the character, occurrence, and general geologic relations of the ore deposits and minerals, the quartz and placer mining, and production of precious metals in this area.

5. The character and genesis of certain contact deposits.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 226-244, 1902.
Describes the character, origin, and geographic distribution of some ore deposits, discusses contact metamorphism and its cause, and gives a genetic classification.

6. The gold production of North America, its geological derivation and probable future.

Mg. & Sci. Press, vol. 85, pp. 177, 193, 206, 1902.

7. Tests for gold and silver in shales from western Kansas.

Eng. & Mg. Jour., vol. 74, pp. 111-112, 1902.
Describes the author's observations in this region.

8. Tests for gold and silver in shales from western Kansas.

U. S. Geol. Surv., Bull. no. 202, 21 pp., 1902.
Gives a brief description of the topography and geology, and describes tests made to determine presence of gold and silver in certain shales in western Kansas.

9. A deposit of titanic iron ore from Wyoming.

Abstract: Science, new ser., vol. 16, pp. 984-985, 1902.

10. Neocene rivers of the Sierra Nevada.

U. S. Geol. Surv., Bull. no. 213, pp. 64-65, 1903.
Gives a brief outline of work upon the Neocene gravels of the Sierra Nevada.

11. Mineral deposits of the Bitterroot Range and Clearwater Mountains, Montana.

U. S. Geol. Surv., Bull. no. 213, pp. 66-70, 1903.
Describes briefly the geography and general geology of the region, and the character and distribution of the ore deposits.

12. Copper deposits at Clifton, Ariz.

U. S. Geol. Surv., Bull. no. 213, pp. 133-140, 1903.
Describes topographic features and geologic structure, the character and occurrence of ore deposits, and occurrences of gold-bearing gravels.

13. The water resources of Molokai, Hawaiian Islands.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 77, 62 pp., 4 pls., 1903.
Includes observations on the geology of the island.

14. The gold production of North America, its geological derivation and probable future.

Intern. Mg. Cong., Proc. 5th sess., pp. 29-36 [1903].
Discusses the occcurrence and production of gold.

15. The copper deposits of Clifton, Arizona.

Eng. & Mg. Jour., vol. 75, pp. 705-707, 3 figs., 1903.
Describes the geological structure and the character and occurrence of the deposits of copper ore.

16. The geological features of the gold production of North America.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 790-845, 1903.
Discusses the occurrence and geologic relations of gold-bearing veins and deposits, and production of gold in general and in the several gold-producing States, Alaska, Canada, and Mexico.

17. [Classification of ore deposits.]

Abstract: Science, new ser., vol. 17, pp. 274-275, 1903.

18. Notes on the geology of Molokai, Hawaiian Islands.

Abstract: Science, new ser., vol. 17, p. 309, 1903.

Lindgren (Waldemar)—Continued.

19. Metallic sulphides from Steamboat Springs, Nevada.

Abstract: Science, new ser., vol. 17, p. 792, 1903.

20. Gypsum deposits in Oregon.

U. S. Geol. Surv., Bull. no. 223, p. 111, 1904.

Describes character, occurrence, economic development, and geologic relations of gypsum deposits in eastern Oregon.

21. A geological reconnaissance across the Bitterroot Range and Clearwater Mountains in Montana and Idaho.

U. S. Geol. Surv., Professional Paper no. 27, 123 pp., 15 pls., 8 figs., 1904.

Describes topography and drainage, character, occurrence, and geologic relations of igneous and sedimentary rocks of Quaternary, Tertiary, and pre-Tertiary age, the geologic structure and history of the area, the character and occurrence of gold, silver, copper, and lead ore deposits, and the mining developments.

22. The genesis of the copper deposits of Clifton-Morenci, Arizona.

Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 511-550, 1905. Abstract: Mg. Rep., vol. 50, p. 617 1904; Mg. & Sci. Press, vol. 89, p. 438, 1904.

Describes the general geology, and the character and occurrence of copper-ore deposits, and discusses their origin.

23. Chemistry of copper deposits.

Eng. & Mg. Jour., vol. 79, p. 189, 1905.

24. The occurrence of stibnite at Steamboat Springs, Nevada.

Am. Inst. Mg. Engrs., Bi-mo. Bull., no. 2, pp. 275-278, 1905.

25. The production of gold in the United States in 1904.

U. S. Geol. Surv., Bull. no. 260, pp. 32-38, 1905.

26. The production of silver in the United States in 1904.

U. S. Geol. Surv., Bull. no. 260, pp. 39-44, 1905.

27. Ore deposition and deep mining.

Econ. Geol., vol. 1, pp. 34-46, 1905.

Discusses the occurrence of various kinds of ore deposits, and the relations of depth to the richness of the deposits.

28. Clifton folio, Arizona.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 129, 1905.

Describes the geography and topography, the geologic structure and history of the area, the occurrence, character, and relations of pre-Cambrian, Cambrian, Ordovician, Devonian, Carboniferous, Cretaceous, and Quaternary formations and intrusive rocks, and the mineral resources, chiefly copper.

29. The copper deposits of the Clifton-Morenci district, Arizona.

U. S. Geol. Surv., Professional Paper no. 43, 27-375 pp., 25 pls., 19 figs., 1905.

Gives a full account of the geology, petrology, character, occurrence, relations, and origin of the copper-ore deposits of this district.

30. The great fault of the Bitterroot Mountains.

Abstract: Science, new ser., vol. 21, p. 224, 1905.

31. The subterranean gases of Cripple Creek [Colorado].

Abstract: Science, new ser., vol. 21, p. 662, 1905.

Lindgren (Waldemar) and **Drake** (N. F.).

1. Nampa folio, Idaho-Oregon.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 103, 1904.

Describes the geography, the geologic history, the occurrence and character of Tertiary strata and igneous rocks and Quaternary deposits, and the economic resources, chiefly placer gold.

2. Silver City folio, Idaho.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 104, 1904.

Describes geography, topography, and drainage, the general geologic history and structure, the character and occurrence of igneous rocks and sedimentary deposits of Tertiary and *Quaternary* age, and the economic resources, chiefly precious metals.

Lindgren (Waldemar) and **Hillebrand** (W. F.).

1. Minerals from the Clifton-Morenci district, Arizona.

Am. Jour. Sci., 4th ser., vol. 18, pp. 448–460, 2 figs., 1904; U. S. Geol. Surv., Bull. no. 262, pp. 42–54, 2 figs., 1905.

Describes the occurrence, optical and other characters, and chemical composition of some minerals from copper deposits in Arizona.

Lindgren (Waldemar) and **Ransome** (Frederick Leslie).

1. Report of progress in the geological resurvey of the Cripple Creek district, Colorado.

U. S. Geol. Surv., Bull. no. 254, 36 pp., 1904.

Describes the general geology and the occurrence and character of the gold-ore deposits.

2. The geological resurvey of the Cripple Creek district, Colorado.

U. S. Geol. Surv., Bull. no. 260, pp. 85–98, 1905.

Describes the general geology and the character and relations of the gold-ore deposits, and discusses the types of ore deposits and their relations to depth from surface.

Lines (E. F.).

1. Well records.

U. S. Geol. Surv., Bull. no. 264, pp. 41–103, 1905.

Gives a summary of well drilling reported in 1904.

Lloyd (John Uri).

1. When did the American mammoth and mastodon become extinct?

Records of the Past, vol. 3, pp. 43–46, 1904.

Lobel (Loicq de).

1. Relation du voyage au Klondyke.

Mus. d'Hist. Nat., [Paris], Bull., vol. 7, pp. 99–103, 1901.

Lobley (J. Logan).

1. Volcanic action and the West Indian eruptions of 1902.

Victoria Inst., Jour. Trans., vol. 35, pp. 208–225, 1903.

Describes volcanic phenomena in general and more particularly those of the West Indian eruptions of 1902, and discusses geologic and geographic conditions, and the causes and results of volcanic action.

Logan (W. N.).

1. Economic products of St. Lawrence County [New York].

N. Y. State Mus., 56th Ann. Rept., pp. r118–r124, 1904.

Describes the occurrence and production of economic products of this area.

2. Geology of Oktibbeha County [Mississippi].

Geological and Industrial Survey of Mississippi, Report 1, Miss. Agr. & Mech. Coll., Bull., vol. 1, no. 2, pp. 5–49, 6 pls., 5 figs., 1904.

Describes drainage, topography, and physiography, the character, occurrence, and relations of the Cretaceous, Tertiary, and Quaternary formations, and the economic resources of the county.

Logan (W. N.) and **Perkins** (W. R.).

1. The underground waters of Mississippi; a preliminary report.

Miss. Agr. Exp. Sta., Bull. no. 89, 112 pp., 23 figs., 1905.

Loomis (Frederic B.).

1. Die Anatomie und die Verwandschaft der Ganoid- und Knochen-fische aus der Kreide-formation von Kansas, U. S. A.

Paleontographica, vol. 46, pp. 213-281, 9 pls., 1900.

Discusses anatomy and relationships of the ganoid and teleost fishes from the Cretaceous strata of Kansas and gives systematic descriptions of a considerable number of forms.

2. On Jurassic stratigraphy in southeastern Wyoming.

Am. Mus. Nat. Hist., Bull., vol. 14, pp. 189–197, 2 pls., 1901.

Describes the geologic structure of the region and the character of the Jurassic and Cretaceous sediment of the region.

Loomis (Frederic B.)—Continued.

3. On Jurassic stratigraphy on the west side of the Black Hills—second paper on American Jurassic stratigraphy.

   Am. Mus. Nat. Hist., Bull., vol. 16, pp. 401-407, 2 pls., 1902.

   Describes the general characters of the Jurassic strata and gives detailed sections.

4. The dwarf fauna of the pyrite layer at the horizon of the Tully limestone in western New York.

   N. Y. State Mus., Bull. 69, pp. 892-920, 5 pls., 1903.

   Describes character and occurrence of the fauna, discusses the causes of its dwarfing, and gives descriptions and figures of the species determined.

5. Two new river reptiles from the Titanothere beds.

   Am. Jour. Sci., 4th ser., vol. 18, pp. 427-429, 11 figs., 1904.

6. On some marine fossils in the Titanothere beds.

   Abstract: Science, new ser., vol. 19, p. 254, 1904.

7. Hyopsodidæ of the Wasatch and Wind River basins.

   Am. Jour. Sci., 4th ser., vol. 19, pp. 416-424, 8 figs., 1905.

Loomis (F. B.), **Emerson** (B. K.) and.

1. On Stegomus longipes, a new reptile from the Triassic sandstones of the Connecticut Valley.

   See **Emerson** (B. K.) and **Loomis** (F. B.), 1.

Louderback (George Davis).

1. General geological features of Nevada and their relationships to the prevailing economic deposits.

   Int. Mg. Cong., 4th sess., Proc., pp. 200-207, 1901.

2. Some gypsum deposits of northwestern Nevada.

   Abstract: Jour. Geol., vol. 11, p. 99, 1903.

   Describes occurrence and character.

3. A structural section of a Basin range.

   Abstract: Jour. Geol., vol. 11, pp. 102-103, 1903.

   Describes the geologic structure and stratigraphic features of Humboldt Lake Range.

4. Basin range structure of the Humboldt region [Nevada].

   Geol. Soc. Am., Bull., vol. 15, pp. 289-346, 8 pls., 1904.

   Describes the character, occurrence, and general relations of sedimentary and igneous rocks of the Basin ranges of western Nevada, particularly those of the Humboldt Lake mountains, and their geologic structure, discusses the mode of their formation and the evidences therefor, and gives an outline of the geologic history of the region.

5. Gypsum deposits in Nevada.

   U. S. Geol. Surv., Bull. no. 223, pp. 112-118, 1 pl., 1 fig., 1904.

   Describes character, occurrence, economic development, and geologic relations of gypsum deposits in northwestern Nevada.

6. The Mesozoic of southwestern Oregon.

   Jour. Geol., vol. 13, pp. 514-555, 1 fig., 1905.

   Describes the character, occurrence, and relations of sedimentary rocks of Cretaceous age and of igneous and sedimentary rocks, the areal distribution of the formations, and their correlation with the standard California type formations.

Loughlin (Gerald Francis).

1. The clays and clay industries of Connecticut.

   Conn. Geol. & Nat. Hist. Surv., Bull. no. 4, 121 pp., 13 pls., 1905.

   Describes the geographic distribution, origin, geological history, composition, and character of Connecticut clays, and the clay-working industries of the State.

Loughlin (G. F.), **Crosby** (W. O.) and.

1. A descriptive catalogue of the building stones of Boston and vicinity.

   See **Crosby** (W. O.) and **Loughlin** (G. F.), 1.

Lovewell (J. T.).

1. Gold in Kansas shales.

   Kans. Acad. Sci., Trans., vol. 18, pp. 129-133, 1 pl., 1903.
   Describes the stratigraphy and discusses the evidence for the presence of gold in these shales.

2. Gold in Kansas.

   Kans. Acad. Sci., Trans., vol. 18, pp. 134-137, 1. pl., 1903.
   Describes experiments to determine amount of gold in Kansas shales.

Low (A. P.).

1. Report on an exploration of part of the south shore of Hudson Strait and of Niagara Bay [Canada].

   Can. Geol. Surv., new ser., vol. 11, Rept. L, 47 pp., 5 pls., 1901. Published in 1899.
   Describes the physiography and crystalline rocks of the region.

2. Report on an exploration of the east coast of Hudson Bay from Cape Wolstenholme to the south end of James Bay.

   Can. Geol. Surv., Ann. Rept., new ser., vol. 13, 84 pp., 2 pls., and maps, 1903. (Published separately, 1902.)
   Gives observations on the general geology, the occurrence and character of igneous, Archean, and Cambrian rocks, and economic resources of the area explored. Includes a list of glacial striæ.

3. Report on the geology and physical character of the Nastapoka Islands, Hudson Bay.

   Can. Geol. Surv., Ann. Rept., new ser., vol. 13, 31 pp., 4 pls., 1903.
   Describes the general geology of the Nastapoka Islands, and gives detailed descriptions of the physical features and the geologic formation of each of the larger islands of the group.

4. The government expedition to Hudson Bay and northward by the S. S. Neptune, 1903-04.

   Can. Geol. Surv., Summ. Rept. for 1904, pp. 122-143, 1905.
   Contains observations on the geology of the region visited.

5. The field work of a physiography class on a glacial problem.

   Jour. Geog., vol. 4, pp. 321-329, 4 figs., 1905.

Lowry (J. D.).

1. Mining in Lower California.

   Eng. & Mg. Jour., vol. 72, pp. 457-458, 1901.
   Contains notes on the occurrence of gold, silver, and copper ores.

Lucas (Anthony F.).

1. The great oil well near Beaumont, Texas.

   Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 362-374, 2 figs., 1902.
   Describes method used in obtaining control of the well, the character of the oil, and gives section passed through in boring.

Lucas (Frederic A.).

1. A new rhinoceros, Trigonias osborni, from the Miocene of South Dakota.

   U. S. Nat. Mus., Proc., vol. 23, pp. 221-223, 2 figs., 1901.

2. A new dinosaur, Stegosaurus marshi, from the Lower Cretaceous of South Dakota.

   U. S. Nat. Mus., Proc., vol. 23, pp. 291-292, 2 pls., 1901.

3. The pelvic girdle of Zeuglodon, Basilosaurus cetoides (Owen), with notes on other portions of the skeleton.

   U. S. Nat. Mus., Proc., vol. 23, pp. 327-331, 3 pls., 1901.
   Includes section of the Zeuglodon beds.

4. A new fossil Cyprinoid, Leuciscus turneri, from the Miocene of Nevada.

   U. S. Nat. Mus., Proc., vol. 23, pp. 333-334, 1 pl., 1901.

5. A flightless auk, Mancalla californiensis, from the Miocene of California.

   U. S. Nat. Mus., Proc., vol. 24, pp. 133-134, 3 figs., 1901.

Lucas (Frederic A.)—Continued.

6. Vertebrates from the Trias of Arizona.

Science, new ser., vol. 14, p. 376, 1901.
Describes briefly material recently collected.

7. Animals of the past.

New York, McClure, Phillips & Co., 1901. 20+258 pp., 41 figs.

8. The restoration of extinct animals.

Smithsonian Inst., Ann. Rept. for 1900, pp. 479–492, 8 pls., 2 figs., 1901.

9. The dinosaurs or terrible lizards.

Smithsonian Inst., Ann. Rept. for 1901, pp. 641–646, 4 pls., 1902.
Reprinted from "Animals of the past."

10. The greatest flying creature, the pterodactyl Ornithostoma.

Smithsonian Inst., Ann. Rept. for 1901, pp. 654–659, 3 pls., 1902.

11. Paleontological notes—the generic name Omosaurus—a new generic name for Stegosaurus marshi.

Science, new ser., vol. 16, p. 435, 1902.
Proposes the name Dacentrurus for Omosaurus Owen, preoccupied, and Hoplitosaurus for the author's previously described Stegosaurus marshi.

12. Paleontological notes—North American elephantids.

Science, new ser., vol. 15, pp. 554–555, 1902.
Gives notes on the occurrence, characters, and synonymy of these fossils.

13. Constructing an extinct monster from fossil remains [Triceratops].

Sci. Am., vol. 86, p. 43, 3 figs., 1902.

14. Animals before man in North America.

New York, D. Appleton and Company, 1902. 291 pp., ill.

15. Notes on the osteology and relationship of the fossil birds of the genera Hesperornis, Hargeria, Baptornis, and Diatryma.

U. S. Nat. Mus., Proc., vol. 26, pp. 545–556, 8 figs., 1903.

16. A skeleton of Hesperornis.

Smith. Misc. Coll., vol. 45, p. 95, 1 pl., 1903.

17. A new plesiosaur.

Smith. Misc. Coll., vol. 45, p. 96, 1 pl., 1903.

18. The greatest flying creature, the great pterodactyl Ornithostoma.

Sci. Am. Suppl., vol. 55, pp. 22645–22646, illus., 1903.
Discusses flight in birds and in the Ornithostoma as indicated by its anatomy.

19. A new batrachian and a new reptile from the Trias of Arizona.

U. S. Nat. Mus., Proc., vol. 27, pp. 193–195, 2 pls., 1904.

20. Paleontological notes. Pleurocœlus versus Astrodon. The armor of Zeuglodon.

Science, new ser., vol. 19, pp. 436–437, 1904.

21. The dinosaur Trachodon annectens.

Smith. Misc. Coll., vol. 45 (Quar. Issue, vol. 1, pts. 3 and 4), pp. 317–320, 2 pls., 4 figs., 1904.
Describes occurrence and characters of fossil remains, and restorations.

22. Eocene whales.

Nature, vol. 71, p. 102, 1904.
Note on the occurrence in Eocene deposits of southern United States of fossil remains which may throw light upon the ancestry of the whale.

Ludlow (Edwin).

1. The coal fields of Las Esperanzas, Coahuila, Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 140–156, 6 figs., 1902.
Describes the geology of the area, and character and production of the coal (Cretaceous).

Lull (Richard Swan).

Skull of Triceratops serratus.

Am. Mus. Nat. Hist., vol. 19, pp. 685–695, 1 pl., 1 fig., 1903.

Lull (Richard Swan)—Continued.

2. Fossil footprints of the Juratrias of North America.

Boston Soc. Nat. Hist., Mem., vol. 5, pp. 461-557, 1 pl., 34 figs., 1904.

Reviews previous work upon fossil footprints, describes their geologic occurrence, gives a classification and systematic descriptions of genera, species, and higher groups.

3. Note on the probable footprints of Stegomus longipes.

Am. Jour. Sci., 4th ser., vol. 17, pp. 381-382, 1904.

4. Nature's hieroglyphics.

Pop. Sci. Mo., vol. 66, pp. 139-149, 8 figs., 1904.

Gives a general account of the footprints in the Triassic rocks of the Connecticut Valley and of the animals by which they were made.

5. Megacerops tyleri, a new species of titanothere from the Bad Lands of South Dakota.

Jour. Geol., vol. 13, pp. 443-456, 2 pls., 2 figs., 1905.

6. Restoration of the Titanothere Megacerops.

Am. Nat., vol. 39, pp. 419-424, 3 figs., 1905.

7. Restoration of the horned dinosaur Diceratops.

Am. Jour. Sci., 4th ser., vol. 20, pp. 420-422, 1 pl., 1905.

8. Footprint interpretation.

Abstract: Science, new ser., vol. 21, p. 299, 1905.

Lunt (Horace F.).

1. The copper deposits of the Kaibab Plateau, Arizona.

Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 989-990, 1904.

Describes the occurrence and character of copper deposits in this region.

Luquer (Lea McIlvaine).

1. On the determination of relative refractive indices of minerals in rock sections by the Becke method.

School of Mines Quart., vol. 33, pp. 127-133, 1902.

2. Bedford cyrtolite.

Am. Geol., vol. 33, pp. 17-19, 1904.

Describes occurrence of this mineral at Bedford, New York, and its characters. Appends a list of additional minerals collected from this locality.

3. Ramosite not a mineral.

Am. Jour. Sci., 4th ser., vol. 17, pp. 93-94, 1904.

Shows from analysis and structure that ramosite is a basic scoria and not a mineral.

4. Minerals in rock sections. The practical methods of identifying minerals in rock sections with the microscope. (Revised edition.)

New York, D. Van Nostrand Company, 1905. 147 pp., 85 figs.

Luquer (Lea McI.), **Moses** (Alfred J.) and.

1. Notes on recent mineralogical literature.

See **Moses** (A. J.) and **Luquer** (L. McI.), 1.

2. Notes on recent mineralogical literature.

See **Moses** (Alfred J.) and **Luquer** (L. I.), 2.

3. Notes on recent mineralogical literature.

See **Moses** (Alfred J.) and **Luquer** (Lea McI.), 3.

Luther (D. Dana).

1. Stratigraphic value of the Portage sandstones.

N. Y. State Mus., Bull. no. 52, pp. 616-631, 1 fig., 1902.

Describes the characters of these beds at various localities and discusses the relations in different sections. Includes a note by J. M. Clarke on the occurrence and relations of the faunas.

2. Stratigraphy of Portage formation between the Genesee Valley and Lake Erie.

N. Y. State Mus., Bull. 69, pp. 1000-1029, 13 figs., 1903.

Describes character, occurrence, and geologic relations of Devonian strata in the Genesee Valley and other localities in western New York.

Luther (D. Dana), **Clarke** (John M.) and.

*1. Stratigraphic and paleontologic map of Canandaigua and Naples quadrangles.

See **Clarke** (John M.) and **Luther** (D. Dana), 1.

2. Geology of the Watkins and Elmira quadrangles [New York], accompanied by a geologic map.

See **Clarke** (J. M.) and **Luther** (D. D.), 2.

3. Geologic map of the Tully quadrangle [New York].

See **Clarke** (J. M.) and **Luther** (D. D.), 3.

Luther (D. D.), **Clarke** (J. M.), **Ruedemann** (R.) and.

1. Contact lines of upper Siluric formations on the Brockport and Medina quadrangles [New York].

See **Clarke** (J. M.), **Ruedemann** (R.), and **Luther** (D. D.), 1.

Lyman (Benjamin Smith).

1. Accounting for the depth of the Wyoming buried valley [Pennsylvania].

Phila. Acad. Nat. Sci., Proc., vol. 54, pp. 507–509, 1902.

Discusses explanations offered to account for the depth of the buried valley and advances a new hypothesis.

2. Lodel Creek and Skippack Creek.

Phila. Acad. Nat. Sci., Proc., vol. 53, pp. 604–607, 1902.

Describes the occurrence of ripple marks, footprints, etc., in shales of the New Red in southeastern Pennsylvania.

3 The original southern limit of the Pennsylvania anthracite beds.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 561–567, 1 fig., 1903.

Discusses topographic and other evidences that show that the anthracite region of Pennsylvania could never have extended far south of its present limits.

4. Biographical notice of J. Peter Lesley.

Am. Inst. Mg. Engrs., Trans. (New York meeting, October, 1903), 35 pp., por. [Advance separate.]

5. Biographical notice of J. Peter Lesley.

Abstract: Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 726–739, 1904.

Lyman (K.), **Park** (E. J.) and.

1. The Springfield water supply. Description of springs and geology of the district.

See **Park** (E. J.) and **Lyman** (K.), 1.

2. The Hannibal formation in Green County [Missouri].

See **Park** (E. J.) and **Lyman** (K.), 2.

Lyon (D. A.).

1. Serpentine marbles of Washington.

Mines and Minerals, vol. 21, p. 349, 1901.

Describes the character and occurrence of the serpentine.

Lyon (D. A.), **Roberts** (Milnor), **Landes** (Henry), and **Thyng** (William S.).

1. The metalliferous resources of Washington, except iron.

See **Landes** (H.), **Thyng** (W. S.), **Lyon** (D. A.), and **Roberts** (M.).

M.

Mabery (Charles F.).

1. Composition of Texas petroleum.

Am. Chem. Soc., Jour., vol. 23, pp. 264–267, 1901.

2. The composition of petroleum. On the hydro-carbons in Pennsylvania petroleum with boiling points above 216°.

Am. Acad. Arts & Sci., Proc., vol. 37, pp. 565–595, 1902.

3. A résumé of the composition and occurrence of petroleum.

Am. Phil. Soc., Proc., vol. 42, pp. 36–54, 1903.

Discusses composition, occurrence in Ohio, Canada, California, and Texas, and the natural *formation of petroleum.*

Mabery (Charles F.) and **Hudson** (Edward J.).

1. On the composition of California petroleum.

Am. Acad. Arts and Sciences, Proc., vol. 36, pp. 255-283, 1901.
Gives results of chemical analyses of petroleum oil from various parts of California.

Macallum (A. B.).

1. The paleochemistry of the ocean in relation to animal and vegetable protoplasm.

Can. Inst., Trans., vol. 7, pp. 535-562, 1904.
Discusses the relative abundance of certain chemical elements in sea water at present and in remote geological ages, and the origin of the physiological relation of the chemical elements in blood plasma.

McBeth (W. A.).

1. The development of the Wabash drainage system and the recession of the ice sheet in Indiana.

Ind. Acad. Sci., Proc. for 1900, pp. 184-192, 2 figs., 1901.
Describes drainage and glacial phonomena.

2. A theory to explain the western Indiana bowlder belts.

Ind. Acad. Sci., Proc. for 1900, pp. 192-194, 1901.
Considers they were deposited by floating ice.

3. Wabash River terraces in Tippecanoe County, Indiana.

Ind. Acad. Sci., Proc. for 1901, pp. 237-243, 2 figs., 1902.
Describes topographic features and character of glacial deposits in this area and discusses changes in drainage.

4. History of the Wea Creek in Tippecanoe County, Indiana.

Ind. Acad. Sci., Proc. for 1901, pp. 244-247, 2 figs., 1902.
Discusses drainage changes produced in this region by glacial action.

Macbride (Thomas H.).

1. Geology of Clay and O'Brien counties [Iowa].

Iowa Geol. Surv., vol. 11, pp. 463-497, 2 figs., and map, 1901.
Describes physiography, the occurrence and character of the Pleistocene beds and the occurrence of economic products.

2. Geology of Cherokee and Buena Vista counties [Iowa], with notes on the limits of the Wisconsin drift as seen in northwestern Iowa.

Iowa Geol. Surv., vol. 12, Ann. Rept. for 1901, pp. 305-353, 4 figs., geol. map, 1902.
Describes the physiographic and drainage features, geologic structure and economic products of the counties.

3. Geology of Kossuth, Hancock, and Winnebago counties [Iowa].

Iowa Geol. Surv., vol. 13, pp. 81-122, 2 pls., 3 figs., 1903.
Describes topography and drainage, deposits of Quaternary age, soils and economic resources.

4. The geology of Emmet, Palo Alto, and Pocahontas counties.

Iowa Geol. Surv., vol. 15, Ann. Rept., 1904, pp. 227-259, 1 pl., 3 figs., 3 maps, 1905.
Describes the physiographic features, the occurrence, character, and relations of Pleistocene deposits and Carboniferous (Mississippian) strata, and the economic resources.

McCaffery (Richard S.), **Yung** (Morrison B.) and.

1. The ore deposits of the San Pedro district, New Mexico.

See **Yung** (M. B.) and **McCaffery** (R. S.), 1.

McCalley (Henry).

1. The Alabama coal fields.

Mines & Minerals, vol. 21, pp. 446-449, 3 figs., 1901.
Describes the general occurrence and character of the coal.

McCalley (Henry), **Smith** (Eugene Allen) and.

1. Index to the mineral resources of Alabama.

See **Smith** (Eugene Allen) and **McCalley** (Henry), 1.

McCallie (S. W.).

1. Some notes on the trap dikes of Georgia.

Am. Geol., vol. 27, pp. 133-134, 3 pls., 1901.
Describes the character and occurrence of dike rocks which cut the crystalline rocks.

McCallie (S. W.)—Continued.

2. Mineral resources of Georgia.

Int. Mg. Cong., 4th session, Proc., pp. 33–42, 1901.
Gives an account of the various economic products of the State.

3. A preliminary report on the roads and road-building materials of Georgia.

Ga. Geol. Surv., Bull. no. 8, 264 pp., 27 pls., 28 figs., 1901. Abstract: Stone, vol. 24, pp. 316–322, 352–353, 1902.

4 The Ducktown copper mining district.

Eng. & Mg. Jour., vol. 74, pp. 439–441, 5 figs., 1902.
Contains notes on the geology of this area.

5. An erratic bowlder from the Coal Measures of Tennessee.

Am. Geol., vol. 31, pp. 46–47, 1903.
Describes the occurrence of a bowlder of rhyolite in a coal seam near Chattanooga, Tenn.

6. Sandstone dikes near Columbus, Georgia.

Am. Geol., vol. 32, pp. 199–202, 4 pls., 1903.
Describes occurrence and character of sandstone dikes in Cretaceous clays.

7. The Barboursville oil-field, Kentucky.

Eng. & Mg. Jour., vol. 76, pp. 12–13, 1903.
Gives a brief sketch of the physiography and general geology of the region and the character and occurrence of the oil.

8. Notes on the wells, springs, and water resources of Georgia.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 207–237, 1904.

9. A preliminary report on the coal deposits of Georgia.

Ga. Geol. Surv., Bull. no. 12, 121 pp., 14 pls., 60 figs., 1904.
Describes the general geology and topography of the northwestern part of Georgia, the geologic structure of the coal fields of that region, the character and occurrence of the coal beds, and the composition of the coals, and in detail the coal deposits and mining developments of Walker, Chattooga, and Dade counties.

10. Experiment relating to problems of well contamination at Quitman, Ga.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 45–54, 1 fig., 1905.
Gives general notes upon the geology of the region.

11. Underground waters of eastern United States: Georgia.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 153–158, 1 fig., 1905.

McCarn (H. L.).

1. The Planet copper mines [Arizona].

Eng. & Mg. Jour., vol. 78, pp. 26–27, 1 fig., 1904.
Describes the general geology and the occurrence and character of copper ores on Big Williams Fork, Arizona.

McCaskey (H. D.).

1. Report on a geological reconnoissance of the iron region of Angat, Bulacan [Philippine Islands].

[Phil. Ids.] Mg. Bur., Bull. no. 3, 62 pp., 41 pls., 1903.
Describes observations upon the geology, the occurrence of iron-ore deposits, and the mining operations.

2. Sixth annual report of the chief of the Mining Bureau for the year ended August 31, 1905.

Manila Bureau of Printing, 1905. 66 pp., 3 maps, 13 pls.
Includes notes upon the occurrence of various ores and building stones.

McCaslin (D. S.).

1. The geology of the artesian basin in South Dakota.

Minn. Acad. Nat. Sci., Bull., vol. 3, pp. 380–388, 1901.

McClung (C. E.).

1. The fossil bison of Kansas.

Kans. Acad. Sci., Trans., vol. 19, pp. 157–159, 1 pl., 1905.

Macco (Albr.).

1. Die Eisenerzlagerstätten am Lake Superior.

Zeit. f. prak. Geol., Jahrg. 12, pp. 48-53, 377-399, 12 figs., 1904.

Describes general geology and occurrence and character of the iron-ore deposits.

McCollum (E. V.), **Bartow** (E.) and.

1. Kansas petroleum.

See **Bartow** (E.) and **McCollum** (E. V.), 1.

McConnell (R. G.).

1. Note on the so-called basal granite of the Yukon Valley [Alaska].

Am. Geol., vol. 30, pp. 55-62, 1902.

Reviews previous discussion of the age and relations of the granite and presents the author's observations and conclusions.

2. The Yukon district.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 23-37, 1902.

Describes topography, geology, and occurrences of gold in this area.

3. The Macmillan River, Yukon district.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 20-36, 1903.

Describes observations upon the physical features, general geology, and glacial deposits of the region.

4. Klondike district, Yukon Territory

Can. Geol. Surv., Summ. Rept. for 1903, pp. 34-42, 1904.

Discusses the occurrence and mining of placer gold in this region.

5. Report on the Klondike gold fields [Yukon].

Can. Geol. Surv., Ann. Rept., vol. 14, pt. B, 71 pp., 6 pls., 2 figs., 3 maps, 1905.

Describes the topography and general geology, the occurrence, character, and relations of stratified, intrusive, and igneous rocks, and the distribution and working of gold-bearing placer gravel beds.

6. The Kluana mining district [Yukon].

Can. Geol. Surv., Summ. Rept. for 1904, pp. 1-18, 1 map, 1905.

Includes observations on the geography and geology of the region, and the occurrence of placer gold.

McConnell (R. G.) and **Brock** (R. W.).

1. Report on the great landslide at Frank, Alberta.

Can., Dept. Int., Ann. Rept. for 1902-3, pt. 8, App., 17 pp., 16 pls., 1904.

Describes the general geology of Turtle Mountain, and in detail the slide of April 29, 1903, and discusses its cause.

McCormick (E.).

1. The Santa Fe mining district, Nevada.

Mines & Minerals, vol. 21, p. 407, 1901.

Describes the geologic structure of the region and the occurrence of copper and silver ores.

MacDonald (Bernard).

1. The ore deposits of Rossland, British Columbia.

Eng. & Mg. Jour., vol. 76, pp. 198-199, illus., 1903.

Describes the geologic structure of the region and the occurrence and origin of the gold-copper ores.

McEvoy (James).

1. Report on the geology and natural resources of the country traversed by the Yellow Head Pass route from Edmonton to Tete Jaune Cache, comprising portions of Alberta and British Columbia.

Can. Geol. Surv., new ser., vol. 11, Rept. D, 44 pp., 1 pl., 1901. Published in 1900.

Describes the physiography and the general character and occurrence of the Tertiary, Cretaceous, Cambrian, and Archean rocks of the region.

2. Notes on the special features of coal mining in the Crow's Nest, B. C.

Can. Mg. Inst., Jour., vol. 7, pp. 500-504, 1904; Can. Mg. Rev., vol. 23, p. 51, 1904; Eng. & Mg. Jour., vol. 77, pp. 601-602, 1904.

Discusses the geologic occurrence and character of the coals of this field.

McFarland (D. F.).

1. Composition of gas from a well at Dexter, Kans.

   Kans. Acad. Sci., Trans., vol. 19, pp. 60-62, 1905.

McFarland (D. F.), **Haworth** (E.) and.

1. The Dexter, Kans., nitrogen gas well.

   See **Haworth** (E.) and **McFarland** (D. F.), 1.

McGee (W J).

1. The New Madrid earthquake.

   Am. Geol., vol. 30, pp. 200-201, 1902.
   Refers to the records of this earthquake described by G. C. Broadhead. See **Broadhead, 2.**

2. Geest.

   Am. Geol., vol. 30, pp. 381-384, 1902.
   Suggests the restoration of the term "geest," proposed by De Luc for the superficial mantle of rock débris.

3. The Antillean volcanos.

   Pop. Sci. Mo., vol. 61, pp. 272-281, 1902.
   Reviews descriptions of the recent volcanic phenomena in this region and discusses the geographic distribution of volcanoes.

4. Powell as an anthropologist.

   Wash. Acad. Sci., Proc., vol. 5, pp. 118-126, 1903.

McGregor (J. H.).

1. The relationships of the Phytosauria.

   Abstract: Science, new ser., vol. 19, pp. 254-255, 1904.

McInnes (William).

1. Region southeast of Lac Seul [Canada].

   Can. Geol. Surv., Summ. Rept. for 1901, pp. 87-93, 1902.
   Describes author's observations in this region.

2. Region on the northwest side of Lake Nipigon.

   Can. Geol. Surv., Summ. Rept. for 1902, pp. 206-211, 1903.
   Gives observations on the topography and geology of the region examined.

3. The Winisk River, Keewatin district.

   Can. Geol. Surv., Summ. Rept. for 1903, pp. 100-108, 1904.
   Gives notes on the geology of the region examined.

4. The upper parts of the Winisk and Attawapiskat rivers.

   Can. Geol. Surv., Summ. Rept. for 1904, pp. 153-164, 1905.
   Includes observations on the geology of the region examined.

McKee (G. W.).

1. Prismatic crystals of hematite.

   Am. Jour. Sci., 4th ser., vol. 17, pp. 241-242, 1 fig., 1904.
   Describes the crystallographic characters.

Mackensen (Bernard).

1. Report on the excavation of Mastodon remains, undertaken by a committee of the Scientific Society of San Antonio [Texas].

   San Antonio Sci. Soc., Bull., vol. 1, pp. 3-10, 4 pls. and 1 fig., 1905.

Mackenzie (George L.).

1. A quick way of preparing sections of rocks.

   Eng. & Mg. Jour., vol. 76, pp. 348-349, 1903.

Maclaren (J. M.).

1. Ores which are deposited by underground waters.

   Mg. & Sci. Press, vol. 85, p. 281, 1902.

McLaughlin (J. E.).

1. Barela Mesa coal field [Colorado].

   Mines & Minerals, vol. 24, p. 139, 1 fig., 1903.
   Describes the occurrence and character of the coal seams, and gives a section of the associated strata.

McLouth (C. D.).

1. Some general remarks on the topography, soils, water resources, flora, etc., of Muskegon County [Michigan].

Mich. Geol. Surv., Ann. Rept. for 1901, pp. 104-107, 1 pl., 1902.

Contains brief notes on the subjects mentioned and a statement regarding the recent geological history of the region.

McMillan (James G.).

1. Explorations in Abitibi [Ontario].

Ont. Bur. Mines, Rept., 1905, vol. 14, pt. 1, pp. 184-212, 1905.

Includes an account of the petrography of the region examined.

McNairn (W. Harvey).

1. On a large phlogopite crystal.

Am. Jour. Sci., 4th ser., vol. 12, p. 398, 1901.

Briefly describes character and occurrence.

Maddren (A. G.).

1. Smithsonian exploration in Alaska in 1904, in search of mammoth and other fossil remains.

Smith. Misc. Coll., vol. 49, pp. 1-117, 7 pls., 3 figs., 1905.

Contains observations on the geology of the region traversed, and the occurrence of fossil remains.

Madsen (Victor).

1. On Jurassic fossils from East-Greenland.

Meddelelser om Grönland, vol. 29, pp. 157-210, 5 pls., 1903. Copenhagen Univ., Mus. Min. & Geol., Comm. Paleont., no. 6, 1903.

Magnus (Harry C.).

1. Abrasives of New York State.

N. Y. State Mus., 57th Ann. Rept., vol. 1, pp. 158-179, 1905.

Contains notes on their occurrence.

Malcolmson (James W.).

1. The Sierra Mojada, Coahuila, Mexico, and its ore deposits.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 100-139, 15 figs., 1902; Eng. and Mg. Jour., vol. 72, pp 705-710, 5 figs., 1901.

Describes geology of the area and character and occurrence of the ore deposits.

Malcolmson (J. W.), **Kirk** (M. P.) and.

1. A new quicksilver mining district.

See **Kirk** (M. P.) and **Malcomson** (J. W.), 1.

Mallery (Willard).

1. Native gold in igneous rocks.

Eng. & Mg. Jour., vol. 77, p. 596, 1904.

Describes the occurrence of native gold in Oregon.

Manning (P. C.).

1. Glacial potholes in Maine.

Portland Soc. Nat. Hist., Proc., vol. 2, pp. 185-200, 2 pls., 1901.

Describes the occurrence and character of the potholes along the coast of Maine and discusses the evidences indicating their origin.

Manson (Marsden).

1. Evolution of climates.

Revised, enlarged, and reprinted from the American Geologist, vol. 24, nos. 2-4, 1899, 86 pp., 7 pls., 1903.

2. [On the length of post-Glacial time.]

Am. Geol., vol. 32 pp. 128-130, 1903.

3. The evolution of climate.

Abstract: Science, new ser., vol. 20, pp. 801-802, 1904.

Manzano (Jesus P.).

1. The mineral zone of Santa Maria del Rio, San Luis Potosi, Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 478-483, 1902.

Contains observations on the geology and mineral deposits of the region.

Marbut (Curtis F.).

1. The evolution of the northern part of the lowlands of southeastern Missouri.

   Mo. Univ., Studies, vol. 1, no. 3, viii, 63 pp., 5 pls., 2 maps, 1902.

   Describes geology and topography of this area and discusses the mode of formation of the physiographic features.

2. The sandstones of the Ozark region in Missouri.

   Abstract: Science, new ser., vol. 17, p. 291, 1903.

3. Recent studies in the physiography of the Ozark region in Missouri.

   Abstract: Science, new ser., vol. 19, p. 527, 1904.

4. Geology and physiography [of Missouri].

   The State of Missouri, pp. 63–70, illus. (incl. geol. map), 1904.

   Describes the physiographic features and general geology of the State of Missouri.

5. Physiography in the university.

   Jour. Geog., vol. 4, pp. 23–30, 1905; Intern. Geog. Cong., Eighth, Rept., pp. 997–1004, 1905.

Marsters (Vernon Freeman).

1. Topography and geography of Bean Blossom Valley, Monroe County, Indiana.

   Ind. Acad. Sci., Proc. for 1901, pp. 222–237, 6 pls., 4 figs., 1902.

   Describes topographic features and glacial history of this area.

2. A preliminary report on a portion of the serpentine belt of Lamoille and Orleans counties [Vermont].

   Vt. Geol. Surv., Rept. State Geol., IV, pp. 86–102, 1 pl., 2 figs., 1904.

   Describes the occurrence and relations of asbestos to surrounding rocks, and discusses the character and origin of the serpentine.

3. Petrography of the amphibolite, serpentine, and associated asbestos deposits of Belvidere Mountain, Vermont.

   Geol. Soc. Am., Bull., vol. 16, pp. 419–416, 11 pls., 1905.

   Includes notes on the general geology of the area and on the occurrence of asbestos and the development of the industry, and a discussion of the origin of serpentinous rocks.

4. The serpentine and associated asbestus minerals of Belvidere Mountain, Vermont.

   Abstract: Science, new ser., vol. 21, p. 426, 1905.

Martel (E. A.).

1. Scientific exploration of caves.

   Intern. Geog. Cong., Eighth, Rept., pp. 165–172, 4 pls., 1905.

   Contains notes on American caves.

Martin (Daniel S.).

1. [Minerals at Haddam, Maine.]

   Abstract: Am. Geol., vol. 27, p. 44, 1901.

   Mentions occurrence of certain minerals.

2. Geological notes on the neighborhood of Buffalo [New York].

   Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 162–163, 1902.

Martin (George Curtis).

1. The geology of Garrett County [Maryland].

   Md. Geol. Surv., Garrett Co., pp. 55–182, 10 pls., 1 fig., 1902.

   Reviews previous geologic work, gives a bibliography, describes the character, distribution taxonomy, and history of the geologic formations and occurrence of the anticlines and synclines of the county.

2. The mineral resources of Garrett County [Maryland].

   Md. Geol. Surv., Garrett Co., pp. 183–231, 2 pls., 1902.

   Describes the character, occurrence and stratigraphic position of the coal seams, the distribution of fire-clays, clays, limestones, building stones, road materials, and other economic products.

3. Petroleum fields of Alaska and the Bering River coal fields.

   U. S. Geol. Surv., Bull. no. 225, pp. 365–382, 1904.

   Describes the location, general geology, and structure of the petroleum fields and the Bering River coal field, and the character and occurrence of the petroleum and coal.

Martin (George Curtis)—Continued.

4. Systematic paleontology of the Miocene deposits of Maryland: Malacostraca and Cirrepedia.
   Md. Geol. Surv., Miocene, pp. 94-97, 2 pls., 1904.

5. Systematic paleontology of the Miocene deposits of Maryland: Mollusca, except Pelecypoda.
   Md. Geol. Surv., Miocene, pp. 130-274, 16 pls., 1904.

6. Systematic paleontology of the Miocene deposits of Maryland: Brachiopoda.
   Md. Geol. Surv., Miocene, pp. 402-404, 1 pl., 1904.

7. Systematic paleontology of the Miocene deposits of Maryland: Vermes.
   Md. Geol. Surv., Miocene, p. 430, 1 pl., 1904.

8. Systematic paleontology of the Miocene deposits of Maryland: Radiolaria.
   Md. Geol. Surv., Miocene, pp. 447-459, 2 pls., 1904.

9. Water resources of the Accident and Grantsville quadrangles, Maryland.
   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 168-170, 1905.

10. Water resources of the Frostburg and Flintstone quadrangles, Maryland and West Virginia.
    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 171-173, 1905.

11. The petroleum fields of the Pacific Coast of Alaska, with an account of the Bering River coal deposits.
    U. S. Geol. Surv., Bull. no. 250, 64 pp., 7 pls. and 3 figs., 1905.
    Describes the geography, stratigraphy, and geologic structure of Controller Bay, Cook Inlet, and Cold Bay regions, the indications of petroleum, and attempts at developing the fields, and the character, occurrence, and geologic relations of the coal in the Bering River region.

12. The Cape Yaktag placers [Alaska].
    U. S. Geol. Surv., Bull. no. 259, pp. 88-89, 1905.
    Describes the general geology, and the occurrence of placer gold.

13. Gold deposits of the Shumagin Islands [Alaska].
    U. S. Geol. Surv., Bull. no. 259, pp. 100-101, 1905.

14. Notes on the petroleum fields of Alaska.
    U. S. Geol. Surv., Bull. no. 259, pp. 128-139, 1905.
    Describes the stratigraphy and geological structure of the petroleum fields, and the progress of development.

15. Bering River coal field [Alaska].
    U. S. Geol. Surv., Bull. no. 259, pp. 140-150, 3 figs., 1905.
    Describes the general geology, the occurrence and geological relations of the coal seams, and the character of the coals.

16. Geology of the Maryland coal district.
    Md. Geol. Surv., vol. 5, pp. 241-290, 5 pls., 2 figs., 1905.
    Describes the stratigraphy, geologic structure, and geologic history of the Coal Measures of western Maryland.

Martin (George Curtis), **Clark** (William Bullock) and.

1. Eocene Echinodermata.
   See **Clark** (W. B.) and **Martin** (G. C.), 1.

2. Eocene Molluscoidea (Brachiopoda).
   See **Clark** (W. B.) and **Martin** (G. C.), 2.

3. Eocene Mollusca.
   See **Clark** (W. B.) and **Martin** (G. C.), 3.

4. The Eocene deposits of Maryland.
   See **Clark** (W. B.) and **Martin** (G. C.), 4.

5. Correlation of the Coal Measures of Maryland.
   See **Clark** (W. B.) and **Martin** (G. C.), 5.

6. Correlation of the formations and members [of the Maryland coal district].
   See **Clark** (W. B.) and **Martin** (G. C.), 6.

Martin (G. C.), and **Rutledge** (J. J.), **Clark** (W. B.).

1. Distribution and character of the Maryland coal beds.

See **Clark** (W. B.), **Martin** (G. C.), and **Rutledge** (J. J.), 1.

Martin (G. C.), **Stanton** (T. W.) and.

1. Mesozoic section on Cook Inlet and Alaska Peninsula.

See **Stanton** (T. W.) and **Martin** (G. C.), 1.

Martin (G. C.), **Stose** (G. W.) and.

1. Water resources of the Pawpaw and Hancock quadrangles, West Virginia, Maryland, and Pennsylvania.

See **Stose** (G. W.) and **Martin** (G. C.), 1.

Martin (J. O.).

1. The Ontario coast between Fairhaven and Sodus bays [New York].

Am. Geol., vol. 27, pp. 331–334, 2 pls., 1901.
Describes the lake shore phenomena of the region.

Martin (K.).

1. Ueber Tertiare Fossilen von der Philippinen.

See **Becker** (George F.), 1.

Martin (L.), **Tarr** (R. S.) and.

1. Recent changes of level in Alaska.

See **Tarr** (R. S.) and **Martin** (L.), 1.

Maso (Saderra).

1. Volcanoes and seismic centers of the Philippine Archipelago.

U. S. Dept. Commerce and Labor, Census of the Philippine Islands, Bull. 3, 80 pp., ills., 1904.
Describes briefly the distribution of active and dormant volcanoes, the occurrence and character of volcanic rocks, the general geology, and in detail the seismic activity in the islands.

Mason (F. H.).

1. Potter's clay at Middle Musquodoboit [Nova Scotia].

Can. Mg. Rev., vol. 20, pp. 175–176, 1 fig., 1901.
Describes the occurrence and chemical character of the material.

Mathews (Edward Bennett).

1. The mineral resources of Cecil County [Maryland].

Md. Geol. Surv., Cecil Co., pp. 195–226, 2 pls., 1902.

2. Recent work in the Piedmont area of northern Maryland.

Abstract: Science, new ser., vol. 15, p. 906, 1902.

3. Abstract of criticism of the quantitative classification of igneous rocks.

Am. Geol., vol. 31, pp. 399–400, 1903.

4. The practical working of the quantitative classification.

Abstract: Science, new ser., vol. 17, pp. 668–669, 1903.
Discusses the classification of igneous rocks.

5. The structure of the Piedmont Plateau as shown in Maryland.

Am. Jour. Sci., 4th ser., vol. 17, pp. 141–159, 249, 1 pl., 2 figs., 1904.
Discusses the character and occurrence of the rocks, reviews the explanations by previous writers of the geologic structure, and describes in detail the structural features of the Piedmont Plateau.

6. Correlation of Maryland and Pennsylvania Piedmont formations.

Geol. Soc. Am., Bull., vol. 16, pp. 329–346, 2 figs., 1905.
Describes the occurrence, character, and relations of the stratigraphic formations in Maryland, and discusses their correlation with those of Pennsylvania and their extension southward into Virginia.

Mathews (Edward B.) and **Miller** (W. J.).

1. Cockeysville marble.

Geol. Soc. Am., Bull., vol. 16, pp. 347–366, 1 pl. and 2 figs. (maps), 1905.
Describes the distribution and character of the geologic formations of the Piedmont region of northeastern Maryland and their structure.

Mathez (Auguste).

1. Geology of the Cananeas [Mexico].

Mg. & Sci. Press, vol. 86, pp. 352-353, 1903.
Describes the geology of the region and the occurrence of the copper-ore deposits.

Matson (George C.).

1. A contribution to the study of the inter-Glacial gorge problem.

Jour. Geol., vol. 12, pp. 133-151, 2 pls., 6 figs., 1904.
Describes physiographic features of the Finger Lake region of New York, and discusses the origin of the gorges in the streams of that region.

2. Peridotite dikes near Ithaca, N. Y.

Jour. Geol., vol. 13, pp. 264-275, 1905.
Describes the occurrence of dikes near Ithaca, New York, and the characters and mineral composition of the rock forming the dikes and discusses their age.

Matthes (Francois E.).

1. Glacial erosion in the northern Rockies.

Abstract: Science, new ser., vol. 15, p. 507, 1902.

2. The Alps of Montana.

Appalachia, vol. 10, pp. 255-276, 4 pls., 1904.
Contains observations on the physiography, general geology, glaciers, and glaciation in the Rocky Mountain region of Montana.

3. The significance of U-shaped glacier and stream channels.

Abstract: Science, new ser., vol. 19, pp. 856-857, 1904.

4. The Lewis Range of northern Montana and its glaciers.

Intern. Geog. Cong., Eighth, Rept., pp. 478-479, 1905.

Matthew (George F.).

1 Preliminary notice of the Etcheminian fauna of Newfoundland.

New Brunswick Nat. Hist. Soc., Bull., vol. 4, pp. 189-196, 3 pls., 1899.
Contains descriptions of several new species.

2. Preliminary notice of the Etcheminian fauna of Cape Breton.

New Brunswick Nat. Hist. Soc., Bull., vol. 4, pp. 198-208, 4 pls., 1899. Abstract: Am. Jour. Sci., 4th ser., vol. 11, p. 396, 1901; Am. Geol., vol. 27, p. 49, 1901.

3. [Devonian of the Acadian provinces.]

Can. Rec. Sci., vol. 8, pp. 344-345, 1901.
Discusses recent papers by David White.

4. Are the St. John plant beds Carboniferous?

Am. Geol., vol. 27, pp. 383-386, 1901.
Discusses the stratigraphic and faunal evidences of the age of the beds.

5. Les plus anciennes faunes Paleozoiques.

Intern. Cong. Geol., Compte Rendu, viii session, pp. 313-316, 1901.
Gives a résumé of what is known regarding the earliest faunas of eastern Canada.

6. A backward step in Paleobotany.

Abstract: Science, new ser., vol. 13, p. 1019, 1901.
Paper read before the Royal Society of Canada.

7. Acrothyra and Hyolithes—a comparison.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 7, sect. 4, pp. 93-107, text figs., 1901. Abstract: Science, new ser., vol. 13, p. 1018, 1901.
Discusses characters, systematic position, and relation of these genera, and describes several species of Hyolithes.

8. Hyolithes gracilis and related forms from the Lower Cambrian of the St. John group.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 7, sect. 4, pp. 109-111, text figs., 1901.

9. New species of Cambrian fossils from Cape Breton.

New Brunswick Nat. Hist. Soc., Bull., vol. 4, pp. 269-286, 1 pl., 1901.

Matthew (George F.)—Continued.

10. Acrothyra, a new genus of Etcheminian brachiopods.
New Brunswick Nat. Hist. Soc., Bull., vol. 4, pp. 303-304, 6 figs., 1901.

11. Monocraterion and Oldhamia.
Irish Naturalist, vol. 10, pp. 135-136, 1901.

12. Additional notes on the Cambrian of Cape Breton, with descriptions of new species.
New Brunswick Nat. Hist. Soc., Bull., vol. 4, pp. 377-426, 6 pls., 1902.
Discusses the Cambrian of this area and describes its fauna.

13. Ostracoda of the basal Cambrian rocks in Cape Breton.
Can. Rec. Sci., vol. 8, pp. 437-466. 2 pls., 1902.
Describes the general characters of ostracods and of a number of new genera and species.

14. Cambrian rocks and fossils of Cape Breton.
Can. Geol. Surv., Summ. Rept. for 1901, pp. 221-230, 1902.
Describes observations in this area and gives a table of geologic formations belonging to the lower portion of the Paleozoic rocks in the maritime provinces of Canada.

15. "Stratigraphy versus paleontology in Nova Scotia."
Science, new ser., vol. 16, pp. 513-514, 1902.
Discusses the comparative age of formations in Nova Scotia and New Brunswick. See White (David), 8.

16. Notes on Cambrian faunas. No. 5. Oboloid shells of the Cambrian system in Canada and their relationship.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 93-98, 1 pl., 1902.

17. Notes on Cambrian faunas. No. 6. Development in size of the inarticulate brachiopods of the basal Cambrian.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 99-105, 1902.
Describes the increase in size in successive Cambrian terranes of shells belonging to the genera Acrotreta, Acrothyra, Leptobolus, Lingulepis, Lingulella, and Obolus.

18. Notes on Cambrian faunas. No. 7. Did the upper Etcheminian fauna invade eastern Canada from the southeast?
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 105-107, 1902.
Discusses migrations of faunas in Cambrian times.

19. Notes on Cambrian faunas. No. 8. Cambrian brachiopoda and mollusca of Mt. Stephen, B. C., with the description of a new species of Metoptoma.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 107-114, 1 pl., 1902.

20. Report on the Cambrian rocks of Cape Breton.
Can. Geol. Surv., Rept. Camb. Rocks Cape Breton, 246 pp., 18 pls., 1903.
Gives a detailed description of the occurrence, fossil contents, and stratigraphic relations of the Cambrian rocks of Cape Breton Island and systematic descriptions of the fossils.

21. New genera of batrachian footprints of the Carboniferous system in eastern Canada.
Can. Rec. Sci., vol. 9, pp. 99-111, 6 figs., 1903.

22. Note in reference to batrachian footprints.
New Brunswick Nat. Hist. Soc., Bull. no. 21 (vol. 5, pt. 1), p. 102, 1903.

23. On batrachian and other footprints.
New Brunswick Nat. Hist. Soc., Bull. no. 21 (vol. 5, pt. 1), pp. 103-108, 1 pl., 1903.

24. How long ago was America peopled?
Am. Geol., vol. 32, pp. 195-196, 1903.
Describes evidences for the length of post-Glacial time.

25. An attempt to classify Paleozoic batrachian footprints.
Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 9, sect. 4, pp. 109-121, 3 pls., 1903.
Discusses generic terms proposed for Paleozoic batrachian footprints, and gives a classification in tabular form of genera and species hitherto described.

26. Note on Oliver's cave.
New Brunswick Nat. Hist. Soc., Bull., vol. 5, pp. 171-174, 1 pl., 1904.
Describes the cave and discusses its origin and age.

Matthew (George F.)—Continued.

27. Notes on Cambrian faunas. No. 9: Protolenus.

New Brunswick Nat. Hist. Soc., Bull., vol. 5, p. 246, 1904.

28. Note on the genus Hylopus of Dawson.

New Brunswick Nat. Hist. Soc., Bull., vol. 5, pp. 247-252, 1 fig., 1904.

29. Physical aspect of the Cambrian rocks in eastern Canada, with a catalogue of the organic remains found in them.

New Brunswick Nat. Hist. Soc., Bull., vol. 5, pp. 253-278, 1904.

Describes the occurrence and character of Cambrian rocks and gives a table of the fossils occurring in them, showing place of publication, locality, and horizon.

30. New species and a new genus of batrachian footprints of the Carboniferous system in eastern Canada.

Can. Roy. Soc., Trans., 2d ser., vol. 10, sect. 4, pp. 77-110, 6 pls., 1905.

31. The Cambric Dictyonema fauna of the slate belt of eastern New York. By Rudolf Ruedemann.

Can. Record Sci., vol. 9, pp. 196-197, 1905.

A note in regard to Ruedemann's view and the views of others as to the upper boundary of the upper Cambrian.

Matthew (William D.).

1. Additional observations on the Creodonta.

Am. Mus. Nat. Hist., Bull., vol. 14, pp. 1-38, 17 figs., 1901.

Discusses the classification of the group and revision of genera.

2. Fossil mammals of the Tertiary of northeastern Colorado.

Am. Mus. Nat. Hist., Mem., vol. 1, pt. 7, pp. 355-447, 3 pls., 34 figs., 1901.

Describes character and occurrence of Tertiary beds in Colorado and the vertebrate fauna obtained from them.

3. A skull of Dinocyon from the Miocene of Texas.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 129-136, 4 figs., 1902.

4. On the skull of Bunælurus, a musteline from the White River Oligocene.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 137-140, 3 figs., 1902.

5. New Canidæ from the Miocene of Colorado.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 281-290, 4 figs., 1902.

6. A horned rodent from the Colorado Miocene. With a revision of the Mylagauli, beavers and hares of the American Tertiary.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 291-310, 17 figs., 1902.

7. The skull of Hypisodus, the smallest of the Artiodactyla, with a revision of the Hypertragulidæ.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 311-316, 4 figs., 1902.

8. List of the Pleistocene fauna from Hay Springs, Nebraska.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 317-322, 1902.

Also describes Capromeryx furcifer n. gen. et sp.

9. The fauna of the Titanotherium beds at Pipestone Springs, Montana.

Am. Mus. Nat. Hist., Bull., vol. 19, pp. 197-226, 19 figs., 1903.

10. A fossil hedgehog from the American Oligocene.

Am. Mus. Nat. Hist., Bull., vol. 19, pp. 227-229, 1 fig., 1903.

11. The evolution of the horse.

Am. Mus. Jour., vol. 3, no. 1, supplement, 30 pp., illus., 1903.

12. The collection of fossil vertebrates. A guide leaflet to the exhibition halls of vertebrate palæontology in the American Museum of Natural History.

Am. Mus. Jour., vol. 3, no. 5, supplement, 32 pp., illus., 1903.

13. Recent zoopaleontology. Concerning the ancestry of the dogs.

Science, new ser., vol. 17, pp. 912-913, 1903.

Matthew (William D.)—Continued.

14. A complete skeleton of Merycodus.

Am. Mus. Nat. Hist., Bull., vol. 20, pp. 101-129, 1 pl. and 21 figs., 1904.

15. Notice of two new Oligocene camels.

Am. Mus. Nat. Hist., Bull., vol. 20, pp. 211-215, 1904.

16. The arboreal ancestry of the mammalia.

Am. Nat., vol. 38, pp. 811-818, 1904.

17. Exhibition of the series of foot bones illustrating the evolution of the camel, recently installed in the Hall of Vertebrate Paleontology of the American Museum of Natural History.

Abstract: Science, new ser., vol. 19, p. 892, 1904.

18. Outlines of the continents in Tertiary times.

Abstract: Am. Geol., vol. 33, pp. 268-269, 1904; Science, new ser., vol. 19, pp. 581-582, 1904.

19. Fossil carnivores, marsupials, and small mammals in the American Museum of Natural History.

Am. Mus. Jour., vol. 5, pp. 23-59, 27 figs., 1905.

Gives a synoptic account of fossil mammals and discusses their origin.

20. Notes on the osteology of Sinopa, a primitive member of the Hyænodontidæ.

Am. Phil. Soc., Proc., vol. 44, pp. 69-72, 1905.

21. The mounted skeleton of Brontosaurus.

Am. Mus. Jour., vol. 5, pp. 63-70, 4 figs., 1905.

Describes the collection and mounting of a skeleton of Brontosaurus, and the probable appearance and habits of life of the animal.

22. Notice of two new genera of mammals from the Oligocene of South Dakota.

Am. Mus. Nat. Hist., Bull., vol. 21, pp. 21-26, 6 pls., 1905.

23. On Eocene Insectivora and on Pantolestes in particular.

Abstract: Science, new ser., vol. 21, pp. 298-299, 1905.

Matthew (W. D.) and **Gidley** (J. W.).

1. New or little known mammals from the Miocene of South Dakota. American Museum expedition of 1903.

Am. Mus. Nat. Hist., Bull., vol. 20, pp. 241-268, 15 figs., 1904.

Describes occurrence, character, origin, and faunal contents of Loup Fork beds of South Dakota, and gives systematic descriptions of vertebrate fossils from these beds.

Mauck (A. V.), **Cumings** (E. R.) and.

1. A quantitative study of variation in the fossil brachiopod Platystrophia lynx.

See **Cumings** (E. R.) and **Mauck** (A. V.), 1.

Maury (Carlotta Joaquina).

1. A comparison of the Oligocene of western Europe and the southern United States.

Am. Paleont., Bull. no. 15, pp. 3-94, 10 pls., 1902.

Describes character and occurrence of Oligocene strata in France, Belgium, Germany, and southern United States, giving faunal lists and sections of strata, and discusses their correlation.

Maxwell (Henry V.).

1. Tennessee iron ores.

Eng. & Mg. Jour., vol. 78, p. 742, 1904.

Describes the occurrence, character, and geologic relations of iron-ore deposits in eastern Tennessee.

Mead (Charles S.).

1. [Report on] Field geology in Ohio State University.

Am. Geol., vol. 32, pp. 261-263, 1903.

Contains observations on geological formations in central Ohio

Mead (J. R.).

1. The Flint Hills of Kansas.

Kans. Acad. Sci., Trans., vol. 17, pp. 207-208, 1901.

Discusses the origin of these hills.

Meade (R. K.).

1. The chemical analysis of Portland cement.

Mg. & Sci. Press, vol. 84, p. 5, 1902.

Meissner (C. A.).

1. Some of the pyrites deposits at Port au Port, Newfoundland.

Eng. & Mg. Jour., vol. 73, pp. 626-627, 2 figs., 1902.
Describes the geology and the occurrence of the ores.

Melander (Axel Leonard).

1. Some additions to the Carboniferous terrestrial arthropod fauna of Illinois.

Jour. Geol., vol. 11, pp. 178-198, 3 pls., 1903.

Memminger (C. G.).

1. Progress in the phosphate mining industry of the United States during 1900.

Min. Ind. for 1900, pp. 513-518. 1901.
Describes occurrence of phosphate in several States.

Mendenhall (Walter Curran).

1. A reconnaissance in the Norton Bay region, Alaska, in 1900.

U. S. Geol. Surv., Reconnaissances in the Cape Nome and Norton Bay regions, Alaska, in 1900, pp. 187-218, 6 pls., 1901.
Describes the physiography, the character and occurrence of the igneous and sedimentary rocks and occurrence of placer gold.

2. Reconnaissance from Fort Hamlin to Kotzebue Sound, Alaska, by way of Dall, Kanuti, Allen, and Kowak rivers.

U. S. Geol. Surv., Professional Paper no. 10, 68 pp., 9 pls., 1902.
Contains an account of the geology of the region traversed.

3. Notes on the geology of the Klondike.

Abstract: Science, new ser., vol. 15, p. 389, 1902.

4. The Chistochina gold field, Alaska.

U. S. Geol. Surv., Bull. no. 213, pp. 71-75, 1903.
Describes briefly the general geology of the region and the occurrence and origin of gold in the placer deposits of this gold field.

5. The Wrangell Mountains, Alaska.

Nat. Geog. Mag., vol. 14, pp. 395-407, illus., 1903.
Includes observations on the physiography, structure, and glaciers of the mountains.

6. A Carboniferous section in the upper Copper River Valley, Alaska.

Abstract: Science, new ser., vol. 17, pp. 25-26, 1903.

7. Chitina copper deposits, Alaska.

Abstract: Science, new ser., vol. 17, p. 387, 1903.

8. Geology of the central Copper River region, Alaska.

U. S. Geol. Surv., Professional Paper no. 41, 133 pp., 20 pls. (incl. 4 maps), 11 figs., 1905.
Reviews previous work upon the area, and describes the stratigraphy, geologic structure, and physiography, and the occurrence, character, and relations of copper and gold deposits. Includes a report by Charles Schuchert (pp. 42-45) upon Permian fossils collected in this region.

9. The hydrology of San Bernardino Valley, California.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 142, 124 pp., 12 pls., 16 figs., 1905.

Mendenhall (Walter C.) and **Schrader** (Frank C.).

1. The mineral resources of the Mount Wrangell district, Alaska.

U. S. Geol. Surv., Professional Paper no. 15, 71 pp., 10 pls., 5 figs., 1903.
Gives a résumé of the previous explorations in this region, and describes the general geology and physiography and occurrences of copper, gold, and other minerals of the region.

2. Copper deposits of the Mount Wrangell region, Alaska.

U. S. Geol. Surv., Bull. no. 213, pp. 141-148, 1903.
Gives a brief account of the geology and occurrences of copper-bearing ores in this region and the mining developments.

Merriam (C. Hart).

1. Bogoslof, our newest volcano.

Harriman Alaska expedition, vol. 2, pp. 291–336, illus., 1902.

Merriam (John C.).

1. A contribution to the geology of the John Day basin [Oregon].

Univ. of Cal., Dept. of Geol., Bull., vol. 2, pp. 269–314, 3 pls., 1 fig., 1901.

Gives a sketch of previous explorations and literature of the region, and describes the classification, character, occurrence, relations, and faunas of the Cretaceous, Tertiary, and Pleistocene strata.

2. A geological section through the John Day basin [Oregon].

Abstract: Jour. Geol., vol. 9, pp. 71–72, 1901; Geol. Soc. Am., Bull., vol. 12, pp. 496–497, 1901.

Describes the character and occurrence of the John Day beds and the associated strata.

3. The John Day fossil beds [Oregon].

Harper's Monthly Magazine, vol. 102, pp. 581–590, 8 figs., 1901.

Describes the general geology and the occurrence of vertebrate fossils.

4. Triassic Ichthyopterygia from California and Nevada.

Univ. Cal., Dept. Geol., Bull., vol. 3, pp. 63–108, 14 pls., 1902.

Notes the stratigraphic position and describes several new species of Shastasaurus from California, and redescribes Leidy's species of Cymbospondylus from Nevada.

5. Triassic Reptilia from northern California.

Abstract: Science, new ser., vol. 15, pp. 411–412, 1902.

6. New Ichthyosauria from the upper Triassic of California.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 249–263, 4 pls., 1903.

7. The Pliocene and Quaternary Canidæ of the Great Valley of California.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 277–290, 3 pls., 1903.

8. Recent literature on Triassic Ichthyosauria.

Science, new ser., vol. 18, pp. 311–312, 1903.

9. Primitive characters of the Triassic Ichthyosaurus.

Abstract: Science, new ser., vol. 17, p. 297, 1903; Geol. Soc. Am., Bull., vol. 14, p. 536, 1904.

10. A note on the fauna of the lower Miocene in California.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 377–381, 1904.

Describes the character and occurrence of faunas in different beds of Miocene age in California.

11. A new marine reptile from the Triassic of California.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 419–421, 1 fig., 1904.

Describes Thalattosaurus alexandræ, new genus and species.

12. A new group of marine reptiles from the Triassic of California.

Congrès intern. de Zool. Sixième, Compte-Rendu, pp. 247–248, 1905.

13. The types of limb structure in the Triassic Ichthyosauria.

Am. Jour. Sci., 4th ser., vol. 19, pp. 23–30, 7 figs., 1905.

Describes characteristics of known types of limbs, and discusses lines of descent among Triassic and Jurassic genera of Ichthyosauria.

14. A primitive ichthyosaurian limb from the middle Triassic of Nevada.

Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 33–38, 1 pl., 1905.

15. The Thalattosauria, a group of marine reptiles from the Triassic of California.

Cal. Acad. Sci., Mem., vol. 5, no. 1, pp. 1–52, 8 pls., 3 figs., 1905.

16. A new sabre-tooth from California.

Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 171–175, 1 fig., 1905.

17. The occurrence of ichthyosaur-like remains in the upper Cretaceous of Wyoming.

Science, new ser., vol. 22, pp. 640–641, 1905.

Merriam (John C.) and **Sinclair** (William J.).

1. The correlation of the John Day and the Mascall.

Abstract: Jour., Geol., vol. 11, pp. 95–96, 1903.

Discusses the age of the beds from a study of the fauna.

Merrill (Frederick J. H.).

1. New York State Museum; report of the director and State geologist, 1900.

   N. Y. State Mus., 54th Ann. Rep., vol. 1, pp. r7-r22, 1902.
   Summary of work done.

2. Description of the State geologic map of 1901.

   N. Y. State Mus., Bull. 56, pp. 3-37, 2 pls. (maps), and a table of formations, 1902.
   Sketches the history of the New York Geological Survey, outlines briefly the geologic provinces and formations of New York, and discusses data used in compiling the geologic map.

3. Report of the director of the State Museum and State geologist for the year 1901.

   N. Y. State Mus., 55th Ann. Rept., pp. r5-r166, 1903.
   Reviews the administrative and scientific work of the year.

4. [Administrative] 56th report of the director of the State Museum and 22d of the State geologist [New York].

   N. Y. State Mus., 56th Ann. Rept., pp. r5-r177, 1904.

5. Report of the Director of the New York State Museum, 1903.

   N. Y. State Mus., 57th Ann. Rept., vol, 1, pp. 5-14, 1905.
   Gives a summarized account of the work for the year ending September 30, 1903.

6. The northeast extremity of the pre-Cambrian Highlands [New York].

   N. Y. State Mus., 57th Ann. Rept., vol. 1, pp. 195-197, 1 pl. (map), 1905.
   Gives notes upon the distribution of Ordovician, Cambrian, and pre-Cambrian rocks of this area. The geologic map is by T. Nelson Dale and L. M. Prindle.

7. Geology of Sonora, Mexico.

   Eng. & Mg. Jour., vol. 80, p. 976, 1905.

Merrill (F. J. H.), assisted by **Magnus** (H. C.).

1. Distribution of Hudson schist and Harrison diorite in the Westchester area of the Oyster Bay quadrangle [New York].

   N. Y. State Mus., 57th Ann. Rept., vol. 1, pp. 193-194, 1 pl. (map), 1905.

Merrill (Frederick J. H.), **Darton** (N. H.), **Hollick** (Arthur), **Salisbury** (R. D.), **Dodge** (R. E), **Willis** (Bailey), and **Pressey** (H. A.).

1. New York City folio, New York-New Jersey.

   U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 83, 1902.
   Describes geographic and physiographic features, general geologic relations and history, character and occurrence of pre-Cambrian, Cambrian, Silurian, Juratrias, and Cretaceous strata, Quaternary deposits, and water supply.

Merrill (George P.).

1. The Department of geology in the National Museum.

   Am. Geol., vol. 28, pp. 107-123, 5 pls., 1901.
   Gives an account of the methods employed in caring for and rendering available to students the materials in charge of this department of the Museum, and in displaying the same for the benefit of the public.

2. On a stony meteorite which fell near Felix, Perry County, Alabama, May 15, 1901.

   U. S. Nat. Mus., Proc., vol. 24, pp. 193-198, 2 pls., 1901.

3. Guide to the study of the collections in the section of applied geology—the nonmetallic minerals [U. S. National Museum].

   U. S. Nat. Mus., Ann. Rep. for 1899, pp. 156-483, 30 pls., 13 figs., 1901.
   Describes the character, occurrence, and uses of the nonmetallic minerals.

4. A newly found meteorite from Admire, Lyon County, Kansas.

   U. S. Nat. Mus., Proc., vol. 24, pp. 907-913, 7 pls., 1902.

5. What constitutes a clay.

   Am. Geol., vol. 30, pp. 318-322, 1902.
   Discusses the composition of clay and reviews a paper by Rösler, entitled "Beiträge zur kenntniss einiger Kaolinlagerstätten."

6. Rutile mining in Virginia.

   Eng. & Mg. Jour., vol. 73, p. 351, 1902; Science, new ser., vol. 15, p. 389, 1902.
   Abstract of paper read before the Geological Society of Washington.

Merrill (George P.)——Continued.

7. A newly found meteorite from Mount Vernon, Christian County, Kentucky.

Am. Geol., vol. 31, pp. 156-158, 1903.

8. John Wesley Powell.

Am. Geol., vol. 31, pp. 327-333, 1 pl. (por.), 1903.

9. The quantitative classification of igneous rocks.

Am. Geol., vol. 32, pp. 48-54, 1903.

Gives an outline of the nomenclature and classification used in the "Quantitative Classification of Igneous Rocks" of Cross, Iddings, Pirsson, and Washington. Includes a table by E. B. Mathews, showing the new nomenclature and terminology as applied to some of the better known igneous rocks.

10. On the Glacial pothole in the National Museum.

Smith. Misc. Col., vol. 45, pp. 100-103, 1 pl., 1903; Sci. Am. Suppl., vol. 58, p. 23844, 1 fig., 1904.

Describes a pothole brought from Maine and the method employed in removing it from its matrix.

11. Stones for building and decoration. Third edition.

New York, John Wiley & Sons, 1903. xi, 551 pp., 33 pls., 24 figs.

12. The non-metallic minerals, their occurrence and uses.

New York, John Wiley & Sons, 1904. 414 pp., 32 pls., 28 figs.

NOTE.—The large number of chemical analyses in this work have not been listed in the index.

13. Catalogue of the type and figured specimens of fossils, minerals, rocks, and ores in the Department of geology, United States National Museum. Part 1.—Fossil invertebrates.

U. S. Nat. Mus., Bull. no. 53, pt. 1, 704 pp., 1905.

See **Schuchert** (Charles) and others, 1.

14. On the origin of veins in asbestiform serpentine.

Geol. Soc. Am., Bull., vol. 16, pp. 131-136, 2 pls. and 2 figs., 1905.

Describes the occurrence and character of asbestos veins in massive serpentine from Thetford, Canada, and discusses their origin.

15. Gold and its associations.

Eng. & Mg. Jour., vol. 79, pp. 902-903, 1905.

Gives a list of specimens of gold ore, showing conditions of occurrence and locality from which derived.

16. The Division of applied geology, U. S. National Museum.

Am. Inst. Mg. Engrs., Bi-mo. Bull. no. 4, pp. 929-937, 1905.

Describes the history, scope, organization, and work of the Department of geology of the U. S. National Museum.

Merrill (George P.) and **Stokes** (H. N.).

1. A new stony meteorite from Allegan, Michigan, and a new iron meteorite from Mart, Texas.

Wash. Acad. Sci., Proc., vol. 2, pp. 41-68, 6 pls., 1900.

Describes the occurrence, characters, and chemical composition of the material.

Meunier (Stanislaus).

1. Remarque sur l'origine de l'activité volcanique.

Acad. des Sci. [Paris], Compt. rend., vol. 136, pp. 123-124, 1903.

Discusses the cause of volcanic phenomena.

Michel-Lévy (Auguste).

1. L'éruption de la montagne Pelée et les volcans des Petites Antilles.

Revue gén. des Sciences, t. 13, pp. 554-557, 3 figs., 1902.

Discusses the broad problems of volcanic activity in the West Indies and other parts of the world.

2. Sur la composition des cendres projetées, le 3 mai 1902, par la Montagne Pelée.

Acad. des Sci. [Paris], Compt. rend., vol. 134, pp. 1123-1124, 1902.

Describes characters of volcanic material ejected from Mont Pelé.

Mickle (G. R.).

1. The iron-bearing rocks of the Nastapokan Islands.

Can. Mg. Inst., Jour., vol. 5, pp. 256-264, 12 figs., 1902.
Describes the occurrence and composition of the iron ores.

2. Volcanic origin of natural gas and petroleum.

Can. Mg. Inst., Jour., vol. 6, pp. 123-126, 1904.

Miers (Henry A.).

1. A visit to the Yukon gold fields. Letter from Henry A. Miers [to the Hon. Clifford Sifton, Canadian Minister of the Interior]. 32 pp., 1901. [Private publication.]

Describes the occurrence of placer gold and the mining operations.

2. Gold mining in Klondike.

Roy. Inst. Gt. Brit., Proc., vol. 17, pp. 72-81, 1903.
Describes physiographic features, general geology, occurrence of placer gold, mining operations, and prospects in the Klondike region.

Miller (Arthur M.).

1. Preglacial drainage in southwestern Ohio.

Science, new ser., vol. 14, pp. 534-535, 1 fig., 1901.

2. A new meteorite (Bath Furnace) from Kentucky.

Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Science, new ser., vol. 17, p. 228, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

3. Additional facts concerning the Bath Furnace meteoric fall of November 15, 1902.

Science, new ser., vol. 18, pp. 243-244, 1903.

4. The lead and zinc bearing rocks of central Kentucky, with notes on the mineral veins.

Ky. Geol. Surv., Bull. no. 2, 35 pp., 8 pls., 1 fig., 1905.
Describes the occurrence, character, and relations of Ordovician strata of central Kentucky, and of the mineral veins producing lead, zinc, fluorite, and barite.

Miller (B. L.).

1. Geology of Marion County [Iowa].

Iowa Geol. Surv., vol. 11, pp. 130-197, 1 pl. 4 figs. and map, 1901.
Describes the physiography, the character and occurrence of the Carboniferous and Pleistocene deposits, and the occurrence of coal.

Miller (B. L.), **Shattuck** (G. B.) and.

1. Physiography and geology of the Bahama Islands.

See **Shattuck** (G. B.) and **Miller** (B. L.), 1.

Miller (Elmer I.).

1. A week in the Mt. Lassen and cinder cone region of northern California.

Am. Bur. Geog., Bull., vol. 2, pp. 150-156, 1901.
Describes physiographic features of this region and discusses the evidences for determining the time of the volcanic activity of Mount Lassen.

Miller (G. W.).

1. The Verde mining district, Yavapai County, Arizona.

Mg. & Sci. Press, vol. 86, pp. 70-71, 3 figs., 1903.
Gives an account of the geology of the district and the occurrence of the copper-ore deposits.

2. Geology of the Butte mining district [Montana].

Ores & Metals, vol. 13, no. 10, pp. 15-16; no. 11, pp. 19-20, 3 figs., 1904.
Describes the mining of silver and copper ores, the general geology and the occurrence, character, and origin of the veins and fissures.

Miller (Gerrit S., jr.).

1. Preliminary list of mammals of New York.

N. Y. State Mus., 53rd Ann. Rept., vol. 1, pp. 267-390, 1901.
Contains list of fossil species.

Miller (Samuel A.).

1. Strophomena and the type of the genus.

   The Nat. Sci. Jour., New Bedford, Mass., vol. 1, no. 2, pp. 29-35, Apr., 1897.

Miller (Willet G.).

1. On some newly discovered areas of nepheline syenite in central Canada.

   Am. Geol., vol. 27, pp. 21-25, 1901.
   Describes character and occurrence in Ontario.

2. Iron ores of Nipissing district [Ontario].

   Ontario Bureau Mines, Rept. for 1901, pp. 160-180, 4 pls., 2 figs., 1901.
   Describes the physiography of the region and the occurrence and character of the iron ores in Huronian rocks.

3. The iron ore fields of Ontario.

   Can. Mg. Rev., vol. 20, pp. 151-158, 3 figs., 1901; Can. Mg. Jour., vol. 4, pp. 265-283, 3 figs., 1901.
   Contains notes on the occurrence and character of iron ore deposits in Ontario.

4. The eastern Ontario gold belt.

   Ontario Bureau Mines, Rept. for 1902, pp. 186-207, 3 figs., map, 1902; Eng. & Mg. Jour., vol. 74, p. 850, 1902.
   Describes the distribution and geologic occurrence of the ore bodies.

5. Lake Temiscaming to the Height of Land [Canada].

   Ontario Bureau Mines, Rept. for 1902, pp. 214-230, 1902.
   Contains notes on the geology of this region.

6. Eastern Ontario; a region of varied mining industries.

   Can. Mg. Inst., Jour., vol. 5, pp. 233-255, 4 figs., 1902.
   Describes the occurrence of mineral deposits.

7. Nepheline syenite in western Ontario.

   Am. Geol., vol. 32, pp. 182-185, 1903.
   Describes occurrence and composition.

8. Cobalt-nickel arsenides and silver in Ontario.

   Eng. & Mg. Jour., vol. 76, pp. 888-890, 1903.
   Describes the occurrence and character of these ore bodies.

9. Iron ranges of northern Ontario.

   Ontario Bur. Mines, [12th] Rept., pp. 304-317, 4 figs., 1903.
   Describes occurrences of iron ores.

10. [In discussion of paper by Waldemar Lindgren, "The geological features of the gold production of North America."]

    Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1077-1079, 1903.
    Discusses occurrences of gold in Canada and conditions under which they can be worked.

11. Cobalt-nickel arsenides and silver.

    Ontario Bur. Mines, Rept., 1904, pt. 1, pp. 96-103, 5 pls., 1904.
    Describes the occurrence, character, and geological relations of ore deposits of nickel-cobalt arsenides and silver in the northern part of Ontario.

12. Undeveloped mineral resources of Ontario.

    Canadian Mg. Inst., Jour., vol. 7, pp. 377-396, 1904.
    Discusses the occurrence of minerals of economic value in the Province of Ontario.

13. The cobalt-nickel arsenides and silver deposits of Temiskaming [Ontario].

    Ontario Bur. Mines, Rept., 1905, pt. 2, 66 pp., 28 figs., and 2 maps, 1905.
    Discusses the occurrence, character, and geological relations of the cobalt, nickel, and silver ores of Ontario.

14. The limestones of Ontario.

    Ontario Bur. Mines, [13th] Rept., pt. 2, 1904, 143 pp., 24 pls., 1904.
    A full account of the character, occurrence, geologic relations, and utilization of the limestones of Ontario.

15. Boston township iron range [Ontario].

    Ontario Bur. Mines, Rept., 1905, vol. 14, pt. 1, pp. 261-268, 1 fig., 1905.
    Describes the occurrence and relations of iron ore deposits.

Miller (Willet G.)—Continued.

16. [Pre-Cambrian rocks in the vicinity of Lake Temiskaming, Ontario.]

Abstract: Science, new ser., vol. 21, p. 221, 1905.

Miller (W. J.), **Mathews** (E. B.) and.

1. Cockeysville marble.

See **Mathews** (E. B.) and **Miller** (W. J.), 1.

Miller (W. W., jr.).

1. Analysis of emery from Virginia.

Abstract: Am. Geol., vol. 27, pp. 314-315, 1901.

2. Examination of sandstone from Augusta County, Virginia.

Abstract: Am. Geol., vol. 27, p. 315, 1901.

3. Analysis of smithsonite from Arkansas.

Abstract: Am. Geol., vol. 27, p. 315, 1901.

Mills (Frank S.).

1. River terraces and reversed drainage [New York].

Jour. Geol., vol. 11, pp. 670-678, 3 figs., 1903.

Describes physiographic features in the Catatonk River Valley in southern New York and their bearing upon pre-Glacial drainage conditions.

2. The delta-plain at Andover, Mass.

Am. Geol., vol. 32, pp. 162-170, 3 pls., 1903.

Describes glacial and physiographic features of this locality.

Mills (S. Dillon).

1. Some recent rock movements in the Laurentian and Huronian areas [Ontario].

Can. Mg. Rev., vol. 23, pp. 174-177, 1904.

2. Occurrence of hematite north of Little Current, Georgian Bay [Canada].

Can. Mg. Rev., vol. 25, pp. 119-122, 1 fig., 1905.

Includes notes on the geology of the locality.

Mills (W. Magoon).

1. A physiographic and ecological study of the Lake Eagle (Winona Lake) region, Indiana.

Ind., Dept. Geol. & Nat. Res., 28th Ann. Rept., pp. 377-394, 3 pls., 4 figs., 1904.

Includes observations on the physiographic features of the region.

Milne (J.).

1. The recent volcanic eruptions in the West Indies.

Nature, vol. 66, pp. 56-58, 107-111, 370-373, 3 figs., 1902.

Discusses recent reports regarding these eruptions.

2. West Indian volcanic eruptions.

Nature, vol. 67, pp. 91-92, 1902.

Discusses volcanic phenomena and their causes with especial reference to the volcanoes Pelé and St. Vincent.

Moffet (Fred H.).

1. The copper mines of Cobre, Santiago de Cuba.

Abstract: Am. Geol., vol. 32, p. 64, 1903; Science, new ser., vol. 18, p. 18, 1903.

2. The Kotzebue placer-gold field of Seward Peninsula, Alaska.

U. S. Geol. Surv., Bull. no. 225, pp. 74-80, 1904.

Describes the general geology, and the occurrence and mining of placer gold.

3. The Fairhaven gold placers, Seward Peninsula, Alaska.

U. S. Geol. Surv., Bull. no. 247, 85 pp., 14 pls., 2 figs., 1905.

Describes the geography, the general geology, the character, occurrence, and relations of metamorphic and igneous rocks and of surficial deposits, and the occurrence and mining of placer gold in this region.

4. The gold placers of Turnagain arm [Alaska].

U. S. Geol. Surv., Bull. no. 259, pp. 90-99, 1 fig., 1905.

Describes the general geology and the occurrence of placer gold.

Moissan (Henri).

1. Sur la présence de l'argon, de l'oxyde de carbone et des carbures d'hydrogène dans les gaz des fumerolles du Mont Pelé à la Martinique.

   Acad. des Sci. [Paris], Compt. rend., vol. 135, pp. 1085-1088, 1902.
   Describes investigations upon the constitution of gases collected from a fumarole of Mont Pelé.

2. Sur la présence de l'argon dans les gaz des fumerolles de la Guadeloupe.

   Acad. des Sci. [Paris], Compt. rend., t. 138, pp. 936-938, 1904.
   Describes the chemical analyses of gas from fumaroles of Guadeloupe.

3. Nouvelles recherches sur la météorite de Cañon Diablo.

   Acad. des Sci. [Paris], Compt. rend., vol. 139, pp. 773-780, 2 figs., 1904. Abstract: Am. Jour. Sci., 4th ser., vol. 19, p. 191, 1905.
   Describes the characters and composition of this meteorite.

Monckton (G. F.).

1. Mining districts near Kamloops Lake, British Columbia.

   Inst. Mg. Engrs. [England], Trans., vol. 18, pp. 293-310, 7 figs., 1899.
   Contains notes on the geology of this area.

2. Cinnabar-bearing rocks of British Columbia.

   Inst. Mg. Engrs., Trans., vol. 27, pp. 463-469, 1 pl., 1904.
   Describes the general geology and the occurrence of quicksilver ores.

Monroe (Charles E.).

1. Notes on a collection of Hamilton fossils from the town of Bethany, Genesee County, N. Y.

   Wis. Nat. Hist. Soc., Bull., vol. 2, pp. 57-67, 1902,
   Contains notes on fossils collected and gives faunal lists.

Montessus de Ballore (D. de).

1. Les États-Unis sismiques.

   Arch. des Sci. Phys. et Nat., 4th ser., vol. 5, pp. 201-216, 1 pl., 1898.
   Gives notes upon and lists of earthquakes that have occurred in various parts of the United States.

Montgomery (Hugh T.).

1. The glacial phenomena as exhibited in northern Indiana and southern Michigan, and the resulting ancient waterways, or the early history of our home.

   Northern Ind. Hist. Soc., Publ., no. 2, 20 pp., 1 fig., 1899.

Montgomery (Thomas H.).

1. Missing links.

   Sci. Am. Suppl., vol. 52, pp. 21732-21734, 1901.
   Abstract of lecture delivered at the Wagner Institute, Philadelphia, Pennsylvania. Discusses evolution of vertebrates.

Moore (Charles J.).

1. The formation of the Cripple Creek mining district, Teller County, Colorado.

   Int. Mg. Cong., 4th session, Proc., pp. 87-91, 1901.

2. The formation of the Leadville mining district, Lake County, Colorado.

   Int. Mg. Cong., 4th session, Proc., pp. 175-179, 1901.

3. Geology applied to mining, or the practical use of geology in mining

   Colo. Sch. Mines, Bull., vol. 2, pp. 68-77, 6 figs., 1904.

Moore (Frederick).

1. Gold in North Carolina.

   Sci. Am. Suppl., vol. 53, p. 21918, 1902.

Moore (Joseph) and **Hole** (Allen D.).

1. Concerning well-defined ripple marks in the Hudson River limestone, Richmond, Indiana.

   Ind. Acad. Sci., Proc. for 1901, pp. 216-220, 3 pls., 1902.

Morgan (William Conger).

1. The origin of bitumen.

Cal. Jour. Tech., vol. 4, pp. 49-50, 1904; Am. Geol., vol. 35, pp. 46-50, 1905.
Discusses various theories proposed to explain the origin of bitumen.

Morgan (William Conger) and **Tallmon** (Marion Clover).

1. A fossil egg from Arizona.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 403-410, 2 pls., 1904.

2. A peculiar occurrence of bitumen and evidence as to its origin.

Am. Jour. Sci., 4th ser., vol. 18, pp. 363-377, 2 pls., 1904.
Describes the occurrence, mode of fossilization, and character and origin of the mineralization of a fossil egg from Arizona.

Morganroth (L. C.).

1. The caves of Huntingdon County, Pennsylvania.

Eng. and Mg. Jour., vol. 71, p. 664, 1901.
Describes the character of the caves.

Morris (Henry G.).

1. Hydro-thermal activity in the veins at Wedekind, Nevada.

Eng. & Mg. Jour., vol. 76, pp. 275-276, illus., 1903.
Discusses the geologic structure and the origin of the ores.

Morscher (L. N.).

1. Corrading action of river water during high floods.

Kans. Univ. Geol. Surv., Min. Res. for 1902, pp. 82-97, 8 figs., 1903.
A study of river erosion based largely upon observations made upon the effects of the Kansas River flood of 1903.

Mosely (E. L.).

1. Submerged valleys in Sandusky Bay [Ohio].

Nat. Geog. Mag., vol. 13, pp. 398-403, 4 figs., 1902.
Discusses the character and occurrence of these valleys and the indications that the tilting of the Great Lakes region is still progressing.

2. Formation of Sandusky Bay and Cedar Point.

Ohio State Acad. Sci., Proc., vol. 4, pt. 5, pp. 179-238, 9 figs., 1905.
Describes changes in the lake shore in this locality and how they have been produced.

Moses (A. J.).

1. Mineralogical notes.

Am. Jour. Sci., 4th ser., vol. 12, pp. 98-106, 6 figs., 1901.
Describes crystallographic characters of pectolite, atacamite, realgar, vesuvianite, chrysoberyl, and pyroxene.

2. Eglestonite, terlinguaite, and montroydite, new mercury minerals from Terlingua, Texas.

Am. Jour. Sci., 4th ser., vol. 16, pp. 253-263, 6 figs., 1903.
Describes crystallographic and other characters and composition.

3. The crystallization of molybdenite.

Am. Jour. Sci., 4th ser., vol. 17, pp. 359-364, 4 figs., 1904.
Describes crystallographic measurements of material from several sources.

4. Eglestonit, Terlinguait und Montroydit, neue Quecksilbermineralien von Terlingua in Texas.

Zeitsch. f. Krystal. u. Min., Bd. 39, pp. 3-13, 6 figs., 1904.
Describes the composition and crystallographic characters of quicksilver minerals from Texas.

5. The crystallization of luzonite, and other crystallographic studies.

Am. Jour. Sci., 4th ser., vol. 20, pp. 277-284, 1905.

Moses (Alfred J.) and **Luquer** (Lea McI.).

1. Notes on recent mineralogical literature.

School of Mines Quart., vol. 23, pp. 290-302, 1902.

Moses (Alfred J.) and **Luquer** (Lea McI.)—Continued.

2. Notes on recent mineralogical literature.

School of Mines Quart., vol. 24, pp. 247-266, 1903.

3. Notes on recent mineralogical literature.

Sch. of Mines Quart., vol. 25, pp. 412-427, 1904.

Moudy (R. B.), **Slosson** (E. E.) and.

1. The Laramie cement plaster.

See **Slosson** (E. E.) and **Moudy** (R. B.), 1.

Mügge (O.).

1. Ueber die Structur des grönländischen Inlandeises und ihre Bedeutung für die Theorie der Gletscherbewegung.

Neues Jahrb. f. Min., Jahrg. 1899, Bd. 2, pp. 123-136, 1899.

Discusses the structure and movement of ice in the interior of Greenland and its bearing upon the theory of the movement of glaciers.

2. Weitere Versuche über die Translationsfähigkeit des Eises, nebst Bemerkungen über die Bedeutung der Structure des grönländischen Inlandeises.

Neues Jahrb. f. Min., Jahrg. 1900, Bd. 2, pp. 80-98, 1900.

Discusses the plasticity of ice, and the significance of the structure of the ice-mass in Greenland.

Muir (John).

1. Notes on the Pacific coast glaciers.

Harriman Alaska Expedition, vol. 1, pp. 119-135, illus., 1902.

Murgoci (G. M.).

1. On the genesis of riebeckite and riebeckite rocks.

Am. Jour. Sci., 4th ser., vol. 20, pp. 133-145, 1905.

Murphy (Edward Charles).

1. Accuracy of stream measurements.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 64, 99 pp., 30 figs., 4 pls., 1902.

Musgrave (Robert).

1. Copper deposits of Mt. Sicker, Vancouver [British Columbia].

Eng. & Mg. Jour., vol. 78, pp. 673-674, 1904.

Describes the occurrence, character, and geologic relations of copper-ore deposits.

Myers (E. W.), **Pressey** (H. A.) and.

1. Hydrography of the southern Appalachians.

See **Pressey** (H. A.) and **Myers** (E. W.), 1.

N.

Nansen (Fridtjof).

1. The Norwegian North Polar expedition, 1893-1896.

Scientific results, vols. 1-2, 1901. Longmans, Green & Co., London, New York, 1901. **Review:** Jour. Geol., vol. 9, pp. 273-275, 1901.

2. The bathymetrical features of the north Polar seas, with a discussion of the continental shelves and previous oscillations of the shore line.

The Norwegian North Polar Expedition, 1893-1896: Scientific Results, vol. 4, XIII, 231 pp., 29 pls., 1904.

Includes in the discussion an account of the continental shelves of Greenland and the North American coast.

Nason (Frank L.).

1. On the presence of a limestone conglomerate in the lead region of St. François County, Missouri.

Am. Jour. Sci., 4th ser., vol. 11, p. 396, 1901.

Brief note announcing discovery of limestone conglomerate between the St. Joseph or Bonne Terre limestone and the Potosi in Missouri.

Nason (Frank L.)—Continued.

2. The geological relations and the age of the St. Joseph and Potosi limestones of St. François County, Missouri.

Am. Jour. Sci., 4th ser., vol. 12, pp. 358-361, 1901.
Describes occurrence of a conglomerate between the two formations and gives a columnar section.

3. The origin of vein cavities.

Eng. and Mg. Jour., vol. 71, pp. 177-179, 209-210, 1901.
Discusses the origin of these vein phenomena.

4. The disseminated lead ores of southeast Missouri.

Eng. and Mg. Jour., vol. 73, pp. 478-480, 2 figs., 1902.
Describes the occurrence and origin of these ores.

5. The geological relations and the age of the St. Joseph and Potosi limestones of Missouri.

Eng. & Mg. Jour., vol. 73, p. 861, 1902.
Discusses the relations of these beds.

Nathorst (A. G.).

1. Bidrag till nordöstra Grönlands geologi.

Stockholm Geol. Fören., Förh., vol. 23, pp. 275-305, 5 pls., 1901.
Describes the geology of northeastern Greenland.

Nattress (Thomas).

1. The Corniferous exposure in Anderdon [Ontario].

Ontario Bureau Mines, Rept. for 1902, pp. 123-127, 1902.
Gives notes on the distribution of the Corniferous, describes the geology at this locality, and gives a faunal list.

Nelson (Aven).

1. Wilbur Clinton Knight.

Science, new ser., vol. 18, pp. 406 409, 1903.
Gives a short account of his life and work, and a chronologic list of his papers.

Neumayer (L.).

1. Die Koprolithen des Perms von Texas.

Palaeontographica, vol. 51, pp. 121-128, 1 pl., 1904.
Describes the occurrence and character of coproliths from the Permian of Texas.

Nevius (J. Nelson).

1. Roofing slate quarries of Washington County [New York].

N. Y. State Mus., 53d Ann. Rept., vol. 1, pp. r135-r150, 12 pls., 1901.
Describes the slates of the various quarries.

2. Emery mines of Westchester County [New York].

N. Y. State Mus., 53d Ann. Rept., vol. 1, pp. r151-r154, 4 pls., 1901.

3. The Sain Alto tin deposits [Mexico].

Eng. & Mg. Jour., vol. 75, p. 929, 1903.
Describes the occurrence of tin.

Newland (David H.).

1. The serpentines of Manhattan Island and vicinity and their accompanying minerals.

School of Mines Quart., vol. 22, pp. 307-317, 399-410, 4 figs., 1901.
Describes the microscopic and chemical characters of the serpentines and the minerals associated with them. Discusses origin of the serpentines.

2. The mining and quarry industry of New York State. Report of operations and production during 1904.

N. Y. State Mus., Bull. 93, pp. 909-970, 1905.

Newsom (John F.).

1. Drainage of southern Indiana.

Jour. Geol., vol. 10, pp. 166-181, 6 pls., 1902.
Describes the drainage features of this region that are dependent upon the geologic structure.

Newsom (John F.)—Continued.

2. A natural gas explosion near Waldron, Indiana.

Jour. Geol., vol. 10, pp. 803–814, 5 figs., 1902.

Describes the fissures and fractures caused by the explosion.

3. A geologic and topographic section across southern Indiana from the Ohio River at Hanover to the Wabash River at Vincennes, with a discussion of the general distribution and character of the Knobstone group in the State of Indiana.

Ind., Dept. Geol. & Nat. Res., 26th Ann. Rept., pp. 227–302, 7 pls., 19 figs., 1903.

Describes topographic and drainage features, the stratigraphy, character, and geological relations of formations of Ordovician, Silurian, Devonian, and Carboniferous age, and discusses the geologic history of the region.

4. Clastic dikes.

Geol. Soc. Am., Bull., vol. 14, pp. 227–268, 11 pls., 19 figs., 1903.

Describes location, geologic relations, character, and origin of clastic dikes, chiefly those of California, and gives references to literature in which clastic dikes are described.

Newton (R. Bullen).

1. List of Thomas Say's types of Maryland (U. S.) Tertiary mollusca in the British Museum.

Geol. Mag., dec. iv, vol. 9, pp. 303–305, 1902.

New York State Museum.

1. Economic geology of New York.

N. Y. State Mus., Handbook 17, 40 pp., 1904.

Gives brief accounts of the occurrence and utilization of mineral products of the State of New York.

Nicholls (H. A. Alford).

1. Notes on the recent eruptions of Mt. Pelée [West Indies].

Nature, vol. 66, pp. 638–639, 1902.

Contains daily notes of the recent eruptions.

Nichols (Henry W.).

1. Nitrates in cave earths.

Jour. Geol., vol. 9, pp. 236–243, 1901. Abstract: Am. Geol., vol. 28, p. 58, 1901.

Reviews paper by William H. Hess on the same subject, gives a number of analyses of soil, limestone, and cave earth, and discusses the origin of the nitrates.

2. [In discussion of paper by Eric Hedburg on "The Missouri and Arkansas zinc mines."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 1015–1021, 1902.

Nichols (J. Clayton).

1. Notes on the Pigholugan and Pigtao gold region, Island of Mindanao, Philippine Islands.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 611–616, 1902.

Describes the occurrence of gold veins and placers.

Nicholson (Frank).

1. The Wisconsin zinc-fields.

Eng. & Mg. Jour., vol. 76, pp. 847–849, illus., 1903.

Describes the general geology of the region and the occurrence and character of the zinc and lead ore deposits and the mining operations.

Nickles (John M.).

1. Geological section—St. Louis to Shawneetown [Illinois].

Ill. Bd. World's Fair Commissioners, Rept., pp. 155–176, 1 pl. (sections), 1895.

Describes geology along the line of the section and gives records of borings and sections of outcrops.

2. Geological section in southern Illinois through Waterloo, Sparta, Murphysboro, and Olmstead.

Ill. Bd. World's Fair Commissioners, Rept., pp. 177–223, 1895.

Describes the geology along the line of the section, gives records of borings and sections of outcrops, and discusses the occurrence and exploitation of natural gas at Sparta, Illinois.

Nickles (John M.)—Continued.

3. The geology of Cincinnati.

Cin. Soc. Nat. Hist., Jour., vol. 20, pp. 49-100, 1 pl. (topographic map), 1902.

Describes topography and geology of Cincinnati and the surrounding region, and gives faunal lists.

4. Description of a new bryozoan "Homotrypa bassleri," n. sp., from the Warren beds of the Lorraine group.

Cin. Soc. Nat. Hist., Jour., vol. 20, pp. 103-105, text figs., 1902.

5. The Richmond group in Ohio and Indiana and its subdivisions, with a note on the genus Strophomena and its type.

Am. Geol., vol. 32, pp. 202-218, 1903.

6. The upper Ordovician rocks of Kentucky and their Bryozoa.

Ky. Geol. Surv., Bull. no. 5, 64 pp., 3 pls., 1905.

Describes the geological history and stratigraphy of the Ordovician area of Kentucky and gives systematic descriptions of characteristic Bryozoa.

Nicol (William).

1. Spinel twins of pyrite.

Am. Jour. Sci., 4th ser., vol. 17, p. 93, 1904.

Nicol (William), **Goldschmidt** (Victor) and.

1. New forms of sperrylite.

See **Goldschmidt** (Victor) and **Nicol** (William), 1.

Nicolau (Th.).

1. Untersuchungen an den eisenführenden gesteinen der insel Disko.

Meddelelser om Groenland, vol. 24, pp. 215-248, 1901.

Describes the occurrence, characters, and composition of the iron-bearing rocks of the Island Disco.

Nicolson (J. T.), **Adams** (Frank D.) and.

1. An experimental investigation into the flow of marble.

See **Adams** (F. D.) and **Nicolson** (J. T.), 1.

Nolan (A. W.) and **Dixon** (J. D.).

1. Geology of St. Helen's Island [Quebec].

Can. Rec. Sci., vol. 9, pp. 53-66, 5 figs., 1903.

Discusses the character and occurrence of Ordovician and Devonian strata, the character, occurrence, and origin of the breccia formation of the island, and the petrography of the intersecting dikes.

Nordenskjöld (Otto).

1. Notes on some specimens of rocks collected by C. Kruuse on the east coast of Greenland, between lat. 65° 35′ and 67° 22′ N.

Meddelelser om Gronland, vol. 28, pp. 1-16, 1 pl., 1904.

Norton (William Harmon).

1. Geology of Cedar County [Iowa].

Iowa Geol. Surv., vol. 11, pp. 282-396, 6 pls., 12 figs. and maps, 1901.

Describes the physiographic and drainage features, the character and occurrence of the Silurian, Devonian, and Pleistocene deposits and the occurrence of economic products.

2. The relation of physical geography to other science subjects.

Science, new ser., vol. 14, pp. 205-210, 1901.

3. Underground waters of eastern United States: Iowa.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no 114, pp. 220-225, 2 figs., 1905.

Describes briefly the shallow supplies of water, and the artesian waters with especial reference to the geologic horizons from which they are derived.

4. Water supplies at Waterloo, Iowa.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 148-155, 1905.

Novarese (Vittorio).

1. Rocks and minerals of south Alaska.

In Filippo de Filippi's The Ascent of Mount St. Elias, Westminster, Archibald Constable and Co., 1900, Appendix E, pp. 232-239.

Gives observations upon the geology and petrology of this part of Alaska.

Nutter (Edward Hoit).

1. Sketch of the geology of the Salinas Valley, California.

Jour. Geol., vol. 9, pp. 330-336, 8 figs., 1901.

Describes the formation of the valley and the character and occurrence of the Tertiary strata which were laid down in this trough.

Nutter (Edward Hoit) and **Barber** (William B.).

1. On some glaucophane and associated schists in the Coast Ranges of California.

Jour. Geol., vol. 10, pp. 738-744, 1902.

Describes the occurrence and contact relations of the schists and discusses their origin.

Nylander (Olof O.).

1. Shells of the marl deposits of Aroostook County, Maine, as compared with the living forms in the same locality.

Nautilus, vol. 14, pp. 101-104, 1901.

Gives list of fossils determined.

O.

Obalski (J.).

1. Notes on the magnetic iron sand of the north shore of the St. Lawrence [Canada].

Can. Mg. Rev., vol. 20, pp. 34-37, 1 fig., 1901; Can. Mg. Inst. Jour., vol. 4, pp. 91-98, 1 fig., 1901.

Gives chemical analyses of the sand and describes its distribution.

2. On a mineral containing radium in the Province of Quebec.

Can. Mg. Rev., vol. 23, pp. 114-116, 1904; Eng. & Mg. Jour., vol. 77, p. 441, 1904; Can. Mg. Inst. Jour., vol. 7, pp. 245-256, 8 figs., 1905.

Describes the occurrence and characters of a mineral, cleveite, containing radium.

O'Brien (Charles J.).

1. Igneous rocks: How to identify them.

Mg. & Sci. Press, vol. 87, p. 50, 1903.

O'Brien (M. E.).

1. Geology of the district west of Redding, Cal.

Mg. & Sci. Press, vol. 86, p. 349, 1903.

Describes the character and occurrence of the rock formations and ore deposits.

Ochsenius (Carl).

1. Natürlicher Koks in den Santa Clara-Kohlenfeldern, Sonora, Mexiko.

Zeitsch. für prak. Geol., Jahrg. 1900, p. 21, 1900.

Describes an occurrence of natural coke.

2. Natronsalpeter in California.

Zeitsch. für prak. Geol., Jahrg. 1902, heft. 10, pp. 337-339, 1902.

Gives a general account of deposits of nitrate of soda.

Ogilvie (Ida H.).

1. Glacial phenomena in the Adirondacks and Champlain Valley.

Jour. Geol., vol. 10, pp. 397-412, 1 pl., 1902; Columbia Univ., Geol. Dept., Contrib., vol. 10, no. 84, 1902.

Describes the striæ, character of ice movement and glacial deposits of the region, and discusses the erosion history of the Adirondacks. Includes table of striæ.

2. An analcite-bearing camptonite from New Mexico.

Jour. Geol., vol. 10, pp. 500-507, 4 figs, 1902; Columbia Univ., Geol. Dept., Contrib., vol. 10, no. 85, 1902.

Describes the general geology of the region and the occurrence and character of the camptonite and compares with rocks of similar composition from other regions.

3. Geological notes on the vicinity of Banff, Alberta.

Jour. Geol., vol. 12, pp. 408-414, 4 figs., 1904.

Describes the general geology and the character and origin of physiographic features of this region.

4. The effect of superglacial débris on the advance and retreat of some Canadian glaciers.

Jour. Geol., vol. 12, pp. 722-743, 11 figs., 1904.

Ogilvie (Ida H.)—Continued.

5. The high altitude conoplain; a topographic form illustrated in the Ortiz Mountains [New Mexico].

   Am. Geol., vol. 36, pp. 27–34, 1 pl., 1905.
   Discusses the conditions of rainfall and erosion by which the conoplain is produced.

6. Geology of the Paradox Lake quadrangle, New York.

   N. Y. State Mus., Bull. 96, pp. 461–508, 17 pls., 3 figs., and map, 1905.
   Describes the general geology, the character and occurrence of Cambrian strata, and in detail the physiography, glaciology, and petrography of the area.

O'Harra (Cleophas C.).

1. Black Hills ore deposits.

   Int. Mg. Cong., 4th session, pp. 97–100, 1901.
   Describes the occurrence of the gold ores.

2. The mineral wealth of the Black Hills [South Dakota].

   S. Dak. Geol. Surv., Bull. no. 3, 136 pp., 31 pls., 1902: S. Dak. School of Mines, Bull. no. 6, Dept of Geol., pp. 1–88, 22 pls., 1902.
   Gives a general geological sketch of the geology of the Black Hills and describes the occurrence of the minerals.

3. The geology and mineralogy of the Black Hills region.

   Black Hills, South Dakota. Papers read before the Black Hills Mining Men's Assoc., pp. 119–127, 1904. Am. Mg. Cong., 6th Ann. Sess., Rept. of Proc., pp. 87–93, 1904.
   Describes the general topographic and geologic features and character of the rocks of the region, and gives notes upon the occurrence, character, and geologic relations of the ore deposits, chiefly gold ores.

O'Harra (C. C.), **Darton** (N. H.) and.

1. Aladdin folio, Wyoming-South Dokota-Montana.

   See **Darton** (N. H.) and **O'Harra** (C. C.), 1.

Ohly (J.).

1. The origin of petroleum. Different theories which have been advanced and the circumstances for and against them.

   Mines & Minerals, vol. 22, pp. 532–533, 1902.

Oliphant (F. H.).

1. [In discussion of paper by R. Pearson on "The discovery of natural gas in Sussex, Heathfield district."]

   Inst. Mg. Engrs. [Engl.], Trans., vol. 26, pp. 505–506 [1904].
   A short note in regard to the distribution of natural gas in the United States.

2. Petroleum.

   U. S. Geol. Surv., Min. Res. of U. S. for 1903, pp. 635–718, 1904.
   Includes a table showing the stratigraphic position of petroleum-producing horizons in the Appalachian and Lima-Indiana fields.

Olsson-Seffer (Pehr).

1. Examination of organic remains in post-Glacial deposits.

   Am. Nat., vol. 37, pp. 785–797, 2 figs., 1903.
   Discusses methods of collecting and examining plant remains from Quaternary deposits, particularly from peat-bogs.

Ordóñez (Ezequiel).

1. Las rhyolitas de México.

   México Inst. Geol., Bul. no. 14, 75 pp., 5 pls., 1900; no. 15, 76 pp., 11 pls., 1901.
   Describes the macroscopic and microscopic characters of the rhyolites and their distribution.

2. La industria minera en México.

   Ciencia y Arte, México, 1901, 19 pp. (Not seen.)

3. The mining district of Pachuca, Mexico.

   Eng. and Mg. Jour., vol. 72, pp. 719–721, 1901.
   Contains notes on the geology and mineralization of the region.

4. The onyx-marble deposits of Jimulco, Coahuila [Mexico].

   Soc. Cient. Ant. Alz., Mem., vol. 15, pp. 381–385, 1901.

Ordóñez (Ezequiel)—Continued.

5. Les cendres d'un volcan près du Santa Maria (Guatemala).

Soc. Cient. Ant. Alz., Mem. y Rev., vol. 18, pp. 33-36, 1902.
Describes materials ejected from a volcano near Santa Maria.

6. The mining district of Pachuca, Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 224-241, 1902.
Includes an account of the topography and geology of the area and the ore formations.

7. Le Xinantacatl ou volcan Nevado de Toluca [Mexico].

Soc. Cient. Ant. Alz., Mem. y Rev., vol. 18, pp. 83-112, 5 pls., 1902.
Describes physiographic features, the character and occurrence of igneous rocks, and the history of its volcanic activity, and compares its physical features with those of other Mexican volcanoes.

8. El Sahcab de Yucatan.

Soc. Cient. Ant. Alz., Mem. y Rev., t. 18, pp. 217-223, 1902.
Describes the character and occurrence of some geologic formations in this part of Mexico.

9. Los volcanes de Zacapu, Michoacan [Mexico].

Soc. Cient. Ant. Alz., t. 18, pp. 257-265, 1 pl., 1902.
Describes physiographic features of the volcanoes of this region and the character and occurrence of igneous rocks.

10. Les dernières éruptions du volcan de Colima [Mexico].

Soc. Cient. Ant. Alz., Mem. y Rev., t. 20, pp. 99-104, 2 pls., 1903.
Describes eruption phenomena and eruptive products of this volcano.

11. El mineral de Angangueo, Michoacan [México].

México, Inst. Geol., Par., t. 1, pp. 59-74, 1 pl., 4 figs., 1904.
Discusses vein phenomena and the occurrence of silver veins in a matrix of pyrite and galena.

12. Las aguas subterraneas de Amozoc [México].

México, Inst. Geol., Par., t. 1, pp. 117-120, 1904.
Discusses the occurrence of underground water in the State of Puebla, Mexico.

13. Las cenizas del volcan de Santa Maria.

México, Inst. Geol., Par., t. 1, pp. 229-234, 1904.
Describes ashes from the volcano Santa Maria, Guatemala.

14. Descripcion de las rocas [de los Estados de Chiapas y Tabasco].

México, Inst. Geol., Bol. no. 20, pp. 101-113, 1905.
Describes the petrographic characters of igneous and volcanic rocks from the States of Chiapas and Tabasco, Mexico.

15. Los Xalapazcos del Estado de Puebla.

México, Inst. Geol., Parer., t. 1, pp. 293-344, 4 pls. and 1 map, 1905.
Describes the physiographic features and geologic structure of the district.

16. Las Barrancas de las Minas y de Tatatila [México].

Soc. Geol. Mex., Bol., t. 1, pp. 119-133, 1 pl., 1905.
Includes notes on the geology of the region.

17. Los crateres de Xico [México].

Soc. Geol. Mex., Bol., t. 1, pp. 19-24, 1 fig., 1905.
Describes physiographic features and geologic structure of the Island of Xico in Lake Chalco, Mexico.

18. El Nauchampatepetl ó Cofre de Perote [México].

Soc. Geol. Mex., Bol., t. 1, pp. 151-168, 4 pls., 1905.
Describes the physiographic features and geologic structure.

Ordóñez (Ezequiel) and **Böse** (E.).

1. Apuntes para la geologia del valle de Chilpancingo [Mexico].

Soc. Cient. Ant. Alz., Mem., vol. 14, pp. 5-12, 2 figs., 1899.
Contains observations on the geology of this area.

Ordóñez (E.), **Lazo** (A. M.) and.

1. Las canteras de San Lorenzo Totolinga y Echagaray [México].

See **Lazo** (A. M.) and **Ordóñez** (E.), 1.

Orr (William).

1. An outline of eight excursions for the study of the physical geography and geology of Springfield [Massachusetts] and vicinity.

   Published for the Springfield Geological Club by the City Library Association, Springfield, Mass., 16 pp., 2 pls., 1901.

Ortmann (Arnold E.).

1. The theories of the origin of the Antarctic faunas and floras.

   Am. Nat., vol. 35, pp. 139–142, 1901.
   Reviews the literature on the subject.

2. Ueber die Decapoden-Gattungen Linuparus und Podocrates.

   Centralbl. f. Min., Geol., u. Pal., pp. 713–714, 1901.
   Discusses the relationships of these genera of crustacea.

3. The geographical distribution of freshwater decapods and its bearing upon ancient geography.

   Am. Phil. Soc., Proc., vol. 41, pp. 267–400, 8 figs., 1902.
   Includes a discussion of the geography of the earth's surface during Cretaceous, Tertiary, and Quaternary times.

Orton (Edward).

1. Petroleum and natural gas in New York.

   N. Y. State Mus., 53d Ann. Rept., vol. 1, pp. 391–526, 3 maps, 1901.
   See Bull. U. S. Geol. Surv., No. 188, Orton no. 4172.

Orton (Edward, jr.).

1. The organization and work of the Geological Survey of Ohio.

   Ohio Geol. Surv., 4th ser., Bull. no. 1, pp. i–xxi, 1903.
   Gives an outline of the work and publications of the preceding and present organizations of the geological survey of Ohio.

Orton (Edward, jr.) and **Peppel** (S. V.).

1. The lime resources of Ohio available for Portland-cement manufacture.

   Ohio Geol. Surv., 4th ser., Bull. no. 3, pp. 88–101, 1904.
   Discusses the occurrence, character, and geologic relations of limestones in Ohio suitable for use in manufacture of cements. Gives a table with many analyses of limestone.

Osann (A.).

1. Beiträge zur Geologie und Petrographie der Apache (Davis) Mts., Westtexas.

   Tschermak's Min. & Petrogr. Mitt., N. F., Bd. 15, pp. 394–456, 2 pls. and 1 fig., 1896.
   Decribes the general geology of the region, the occurrence of igneous and Carboniferous and Cretaceous sedimentary rocks, and the petrographic characters of the igneous rocks.

2. Notes on certain Archæan rocks of the Ottawa Valley [Canada].

   Can. Geol. Surv., Ann. Rept., new ser., vol. 12, pp. 1 o–84 o, 12 figs., 11 pls., 1902.
   Discusses petrology of this region and occurrence and characters of economic minerals.

Osborn (Henry Fairfield).

1. The recent progress of vertebrate paleontology in America.

   Science, new ser., vol. 13, pp. 45–49, 1901.
   Abstract of lecture delivered at Trinity College, Hartford, Conn.

2. Recent zoo-paleontology.

   Science, new ser., vol. 14, pp. 330–331. 1901.
   Contains notes on papers relating to the John Day beds and to the Kansas chalk.

3. Recent zoo-paleontology.

   Science, new ser., vol. 14, pp. 699–700, 1901.
   Reviews Wortman's work on the Carnivora and Gidley's work on Pleistocene horses.

4. Des méthodes précises mises actuellement en œuvere dans l'étude des vertébrés fossiles des États-Unis d'Amérique.

   Intern. Cong. Geol., Compte Rendu, viii session, pp. 353–356, 2 pls., 1901.

5. Corrélation des horizons de mammifères Tertiaires en Europe et en Amérique.

   Intern. Cong. Geol., Compte Rendu, viii Session, pp. 357–363, 1901.

Osborn (Henry Fairfield)—Continued.

6. Systematic revision of the American Eocene primates and of the rodent family Myxodectidæ.

Abstract: N. Y. Acad. Sci., Annals, vol. 14, p. 111, 1901.

7. Homoplasy as a law of latent or potential homology.

Am. Nat., vol. 36, pp. 259–271, 6 figs., 1902.

Discusses the independent evolution of identical structures in teeth of different families of mammals as a form of homology which has heretofore been defined as homoplasy.

8. The law of adaptive radiation.

Am. Nat., vol. 36, pp. 353–363, 3 figs., 1902.

Quotes from the author's previous papers bearing upon this law and shows how it is exhibited in the geographic distribution of orders, families, and related contemporaneous forms.

9. Dolichocephaly and brachycephaly in the lower mammals.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 77–89, 5 figs., 1902.

Discusses these factors in cranial evolution and their correlation with similar ones in the trunk and limbs.

10. The four phyla of Oligocene Titanotheres. Titanothere contributions, no. 4.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 91–109, 13 figs., 1902.

Discusses the general characters of the material and their stratigraphic position.

11. American Eocene Primates and the supposed rodent family Mixodectidæ.

Am. Mus. Nat. Hist., Bull., vol. 16, pp. 169–214, 40 figs., 1902.

Points out the synonymous genera and describes the species, including several new ones.

12. Distinctive characters of the mid-Cretaceous fauna.

Can. Geol. Surv., Contr. to Can. Paleont., vol. 3, pt. 2, pp. 5–21, 1902.

Discusses relative age and correlation of Cretaceous formations and the relations of their faunas and gives in tabular form the geologic distribution of Cretaceous vertebrates.

13. Recent zoopaleontology—new vertebrates of the mid-Cretaceous.

Science, new ser., vol. 16, pp. 673–676, 1902.

Gives an abstract of a report by Henry F. Osborn and Lawrence M. Lambe on "Vertebrata from the mid-Cretaceous Rocks of the Northwest Territory of Canada."

14. Recent zoopaleontology: a remarkable new mammal from Japan, its relationship to the Californian genus Desmostylus, Marsh—progress of the exploration for fossil horses—the perissodactyles typically polyphyletic.

Science, new ser., vol. 16, pp. 713–715, 1902.

15. Recent zoopaleontology: Triassic ichthyosaurs from California and Nevada—abandonment of the Oligocene and Miocene lake basin theory—studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Science, new ser., vol. 16, pp. 749–752, 1902.

16. Ornitholestes hermanni, a new compsognathoid dinosaur from the upper Jurassic.

Am. Mus. Nat. Hist., Bull., vol. 19, pp. 459–464, 3 figs., 1903.

17. Glyptotherium texanum, a new glyptodont, from the lower Pleistocene of Texas.

Am. Mus. Nat. Hist., Bull., vol. 19, pp. 491–494, 1 pl., 1903.

18. The skull of Creosaurus.

Am. Mus. Nat. Hist., Bull., vol. 19, pp. 697–701, 2 figs., 1903.

19. The reptilian subclasses Diapsida and Synapsida and the early history of the Diaptosauria.

Am. Mus. Nat. Hist., Mem., vol. 1, pt. 8, pp. 451–507, 1 pl., 24 figs., 1903.

Discusses classification, anatomy, and phylogeny of fossil reptiles and defines the major classification groups and genera.

20. Recent zoopaleontology.

Science, new ser., vol. 17, pp. 312–314, 1903.

Includes a brief discussion of the age of the Fort Union beds and related formations.

21. Recent zoopaleontology.

Science, new ser., vol. 17, pp. 356–357, 1903.

Discusses the age of the typical Judith River beds.

Osborn (Henry Fairfield)—Continued.

22. Recent zoopaleontology.
    Science, new ser., vol. 17, pp. 673-674, 1903.
    Gives a comparison of the European and American Eocene horses.
23. Evolution of the Proboscidea in North America.
    Abstract: Science, new ser., vol. 17, p. 249, 1903.
24. On recent models and restorations of a number of extinct animals, with a discussion of their probable habits and mode of life.
    Abstract: Science, new ser., vol. 17, p. 978, 1903.
25. Vertebrate paleontology in the United States Geological Survey.
    Science, new ser., vol. 18, pp. 835-837, 1903.
    Describes the work being done to complete Professor Marsh's monographs on the Titanotheres, Ceratopsia, Stegosauria, and Sauropoda.
26. Reclassification of the Reptilia.
    Am. Nat., vol. 38, pp. 93-115, 13 figs., 1904.
    Reviews the history and principles of classification of the Reptilia, proposes a new classification, and gives definitions of the higher groups.
27. Paleontological evidence for the original tritubercular theory.
    Am. Jour. Sci., 4th ser., vol. 17, pp. 321-323, 1 pl., 1904.
28. Recent zoopaleontology. Field expeditions during the past season.
    Science, new ser., vol. 19, pp. 35-36, 1904.
29. Recent advances in our knowledge of the evolution of the horse.
    Am. Phil. Soc., Proc., vol. 43, pp. 156-157, 1904. Abstract: Science, new ser., vol. 19, p. 717, 1904.
30. An armadillo from the middle Eocene (Bridger) of North America.
    Am. Mus. Nat. Hist., Bull., vol. 20, pp. 163-165, 1904.
31. New Oligocene horses.
    Am. Mus. Nat. Hist., Bull., vol. 20, pp. 167-179, 2 pls. and 8 figs., 1904.
32. Manus, sacrum, and caudals of Sauropoda.
    Am. Mus. Nat. Hist., Bull., vol. 20, pp. 181-190, 6 figs., 1904.
33. Teleorhinus browni—a teleosaur in the Fort Benton.
    Am. Mus. Nat. Hist., Bull., vol. 20, pp. 239-240, 1904.
34. New Miocene rhinoceroses with revision of known species.
    Am. Mus. Nat. Hist., Bull., vol. 20, pp. 307-326, 21 figs., 1904.
35. The great Cretaceous fish Portheus molossus Cope.
    Am. Mus. Nat. Hist., Bull., vol. 20, pp. 377-381, 1 pl. and 4 figs., 1904.
36. Revised list of casts, models, photographs, and restorations of fossil vertebrates of the Department of vertebrate paleontology of the American Museum of Natural History.
    Am. Mus. Nat. Hist., Bull., vol. 20, Supplement, 52 pp., 8 figs., 1904.
37. On the position of the bones of the forearm in the Opisthocœlia or Sauropoda.
    Abstract: Science, new ser., vol. 19, pp. 255-256, 1904.
38. On the use of the sandblast in cleaning fossils.
    Abstract: Science, new ser., vol. 19, p. 256, 1904.
39. A reclassification of the Reptilia.
    Abstract: Science, new ser., vol. 19, pp. 256-257, 1904.
40. On the primary components of vertebræ and their relations to ribs.
    Abstract: Science, new ser., vol. 19, p. 257, 1904.
41. The classification of the Reptilia.
    Abstract: Science, new ser., vol. 19, pp. 307-308, 1904.
42. Fossil wonders of the West. The dinosaurs of the Bone-cabin quarry, being the first description of the greatest "find" of extinct animals ever made.
    The Century Magazine, vol. 68, pp. 680-694, 18 figs., 1904.

Osborn (Henry Fairfield)—Continued.

43. The evolution of the horse in America. First complete account of the American Museum explorations under the William C. Whitney fund.

The Century Magazine, vol. 69, pp. 3-17, 15 figs., 1905.

44. Ichthyosaurs: The evolution of fitness in ichthyosaurs.

The Century Magazine, vol. 69, pp. 414-422, 7 figs., 1905.

45. Recent zoopaleontology.

Science, new ser., vol. 21, pp. 315-316, 1905.

Gives an abstract of a lecture delivered by the author before the Society of Naturalists at the Philadelphia meeting upon the evolution and phylogeny of various vertebrate types.

46. Recent vertebrate paleontology. Fossil mammals of Mexico.

Science, new ser., vol. 21, pp. 931-932, 1905.

Gives notes upon the fossil mammals of Mexico and the present location of the specimens.

47. Recent vertebrate paleontology.

Science, new ser., vol. 22, pp. 188-189, 1905.

Notes on exploration going on for vertebrate fossils and work in progress in museums and laboratories on vertebrate paleontology.

48. The present problems of paleontology.

Pop. Sci. Mo., vol. 66, pp. 226-242, 1905.

49. Ten years' progress in the mammalian paleontology of North America.

Congr. intern. de Zool., 6e, Compt. rend., pp. 86-113, 15 pls., 7 figs., 1905; Am. Geol., vol. 36, pp. 199-229, 7 figs, 1905.

Gives a résumé of the progress in mammalian paleontology during the last ten years and indicates lines of exploration and research. Discusses phylogenetic relations of various mammals.

50. Tyrannosaurus and other Cretaceous carnivorous dinosaurs.

Am. Mus. Nat. Hist., Bull., vol. 21, pp. 259-265, 2 figs., 1905.

51. Skull and skeleton of the sauropodous dinosaurs, Morosaurus and Brontosaurus.

Science, new ser., vol. 22, pp. 374-376, 1905.

52. The evolution of the horse.

Brit. Assoc. Adv. Sci., Rept. 74th Meeting, pp. 607-608, 1905.

53. Western explorations for fossil vertebrates.

Pop. Sci. Monthly, v. 67, pp. 561-568, 6 figs., 1905.

54. [Phylogeny and classification of the Reptilia.]

Abstract: Science, new ser., vol. 21, p. 294, 1905.

55. Evolution of the horse. Recent discoveries and studies.

Congr. intern. de Zool., Sixième, Compt. rend., p. 282, 1905.

Osborn (Henry Fairfield) and **Granger** (Walter).

1. Fore and hind limbs of Sauropoda from the Bone Cabin quarry [Wyoming].

Am. Mus. Nat. Hist., Bull., vol. 14, pp. 199-208, 6 figs., 1901.

Osgood (Wilfred H.).

1. Scaphoceros tyrrelli, an extinct ruminant from the Klondike gravels.

Smith. Misc. Coll., vol. 48 (Quart. Issue, vol. 3, pt. 2), pp. 173-185, 6 pls., 1905.

Osmont (Vance C.).

1. A geological section of the Coast Ranges north of the Bay of San Francisco.

Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 37-87, 2 pls., 1 fig., 1904.

Describes the occurrence, character, and relations of stratified rocks of Jurassic, Cretaceous, Tertiary, and Quaternary age, and of igneous rocks observed in cross sections of the Coast Ranges of California, and the petrographical characters of the igneous rocks, and discusses the correlation of the Eocene strata, the geological structure along the sections, and the geologic history of the region.

2. Arcas of the California Neocene.

Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 89-100, 4 pls., 1904.

Gives systematic descriptions and discusses the occurrence of associated fossils, giving faunal lists.

O'Sullivan (Owen).

1. Survey of the south and west coast of James Bay.

   Can. Geol. Surv., Summ. Rept. for 1904, pp. 173-179, 1 map, 1905.
   Includes observations on the geology of the region examined.

Otsuka (S.).

1. A short sketch on the petroleum industry of Europe and America. [In Japanese.]

   Japan Geol. Surv., Bull., vol. 16, no. 1, pp. 1-82, 5 pls. (maps), 1903.
   Includes observations on the petroleum industry in the Appalachian region, Texas, and California.

Owen (Luella Agnes).

1. The bluffs of the Missouri River.

   Intern. Geogr.-Kongr., Siebenter, Verh., pt. 2, pp. 686-690, 1901.
   Describes loess deposits and discusses evidence as to their origin.

2. More concerning the Lansing skeleton.

   Bibliotheca Sacra, 73d yr., pp. 572-578, 190
   Reviews the discussion as to the geological age of the Lansing skeleton.

3. The loess at St. Joseph [Missouri].

   Am. Geol., vol. 33, pp. 223-228, 2 pls., 1904.
   Describes the occurrence and character of loess deposits at this point and discusses the origin of the loess.

4. Cave regions of the Ozarks and Black Hills.

   Cincinnati, The Editor Publishing Co., 1898. 228 pp., illus.

5. Evidence on the deposition of the loess.

   Am. Geol., vol. 35, pp. 291-300, 1 pl., 1905.
   Discusses the occurrence and character of fossil mollusks in the loess at St. Joseph, Mo., and their bearing on the question of the origin of the loess.

P.

Palache (Charles).

1. A description of epidote crystals from Alaska.

   Am. Acad. Arts & Sci., Proc., vol. 37, pp. 531-535, 1 pl., 1902; Zeitsch. für Kryst. u. Min., vol. 36, pp. 433-437, 1 pl., 1902.

2. The Alaska-Treadwell mine. Notes on the geology of the mine and vicinity.

   Harriman Alaska Expedition, vol. 4, pp. 59-66, 2 figs., 1904.
   Describes the general geology, the occurrrence and petrographic characters of the rocks, the occurrence of the gold ore deposits, and the mining operations.

3. Geology about Chichagof Cove, Stepovak Bay, with notes on Popof and Unga Islands.

   Harriman Alaska Expedition, vol. 4, pp. 69-88, 2 pls., 3 figs., 1904.
   Describes the general geology, the character and occurrence of sedimentary and igneous rocks, and the petrographic characters of the latter.

4. Notes on the minerals collected [by the Harriman Alaska expedition].

   Harriman Alaska Expedition, vol. 4, pp. 91-96, 1904.
   Describes the occurrence and characters of some minerals, and gives a list of minerals obtained and their localities.

Palache (Charles) and **Fraprie** (F. R.).

1. (1) Babingtonite from Somerville, Massachusetts. (2) Babingtonite from Athol, Massachusetts.

   Am. Acad. Arts & Sci., Proc., vol. 38, pp. 383-393, 2 pls., 1902.
   Describes occurrence, crystallography, and chemical analysis.

Palache (Charles) and **Wood** (H. O.).

1. A crystallographic study of millerite.

   Am. Jour. Sci., 4th ser., vol. 18, pp. 343-359, 5 figs., 1904.

Palache (C.), **Jaggar** (T. A., jr.) and.

1. Bradshaw Mountains folio, Arizona.

   See **Jaggar** (T. A., jr.) and **Palache** (C.), 1.

Palache (Charles), **Lawson** (Andrew C.) and.

1. The Berkeley Hills [California]. A detail of Coast Range geology.

   See **Lawson** (A. C.) and **Palache** (C.), 1.

2. The Berkeley Hills [California]. A detail of Coast Range geology.

   See **Lawson** (A. C.) and **Palache** (C.), 2.

Palache (Charles), **Wolff** (John E.) and.

1. Apatite from Minot, Maine.

   See **Wolff** (J. E.) and **Palache** (C.), 1.

Palmer (Charles M.).

1. Chrysocolla: a remarkable case of hydration.

   Am. Jour. Sci., 4th ser., vol. 16, pp. 45-48, 1903.
   Gives composition and describes absorption of water.

Palmer (T. S.).

1. North American Fauna, no. 23. Index generum mammalium: a list of the genera and families of mammals.

   U. S. Dept. Agric., Div. Biol. Surv., 984 pp., 1904.
   Includes also the fossil forms.

Park (Emma J.).

1. Winoka gravels, supposed Tertiary deposits. Origin of deposits.

   Drury College, Bradley Geol. Field Station, Bull., vol. 1, pp. 14-19, 1904.
   Describes gravel deposits of southwestern Missouri and discusses their age.

Park (Emma J.) and **Lyman** (Kate).

1. The Springfield water supply. Description of springs and the geology of the district.

   Drury Coll., Bradley Geol. Field Station, Bull., vol. 1, pp. 45-49, 1905.

2. The Hannibal formation in Greene County [Missouri].

   Drury Coll., Bradley Geol. Field Station, Bull., vol. 1, pp. 79-80, 1905.

Park (James).

1. On the cause of border-segregation in some igneous magmas.

   Mg. Rep., vol. 51, pp. 481-482, 1905.

Parker (Charles A.).

1. Evidences of rheumatoid arthritis in the Lansing man.

   Am. Geol., vol, 33, pp. 39-42, 1 fig., 1904.
   Describes anatomical features of the fossil human bones discovered near Lansing, Kansas.

Parkinson (John).

1. The hollow spherulites of the Yellowstone and Great Britain.

   Lond. Geol. Soc., Quart. Jour.. vol. 57, pp. 211-225, 1 pl., 4 figs., 1901.
   Describes the author's observations in the Yellowstone region and discusses the origin of spherulites.

2. Some lake basins in Alberta and British Columbia.

   Geol. Mag., new ser., dec. iv, vol. 8, pp. 97-101, 1 pl., 1901.
   Describes the physiography of the region and the character of the lake basins.

Parks (William Arthur).

1. The Huronian of the Moose River Basin [Ontario].

   Toronto Univ., Studies, Geol. Series, no. 1, 35 pp., 1 map, 1900.
   Discusses the occurrence, character, and classification of the Huronian rocks of the region.

2. The country east of Nipigon Lake and River [Canada].

   Can. Geol. Surv., Summ. Rept. for 1901, pp. 103-107, 1902.
   Describes the author's observations in this area.

3. Region lying northeast of Nipigon Lake.

   Can. Geol. Surv.. Summ. Rept. for 1902, pp. 211-220, 1903.
   Gives observations upon the physiography, geology, and economic resources of the region examined.

Parks (William Arthur)—Continued.

4. Fossiliferous rocks of southwest Ontario.

Ontario Bur. Mines, [12th] Rept., pp. 141-156, 1903.

Describes location, lithologic and stratigraphic features of outcrops of Silurian and Devonian strata of southwest Ontario, and gives lists of fossils obtained and discusses economic resources.

5. Devonian fauna of Kwataboahegan River [Ontario].

Ontario Bur. Mines, Rept., 1904 pt. 1, pp. 180-191, 8 pls., 1904.

Describes the occurrence of Devonian fossils in the Moose River basin of Ontario, and givse systematic descriptions of new species.

6. A remarkable parasite from the Devonian rocks of the Hudson Bay slope.

Am. Jour. Sci., 4th ser., vol. 18, pp. 135-140, 6 figs., 1904.

7. The study of stratigraphy.

Can. Mg. Inst., Jour., vol. 7, pp. 168-176, 1904.

Discusses the necessity of stratigraphy and paleontology in the geologic investigations of economic resources.

8. The geology of a district from Lake Timiskaming northward [Ontario].

Can. Geol. Surv., Summ. Rept. for 1904, pp. 198-225, 1905.

Describes the geology of the district and the occurrence and relations of ore deposits containing cobalt.

9. Formation of coal beds and life of the coal forming age.

Abstract: Hamilton Sci. Assoc., Jour. & Proc., no. 21, p. 67, 1905.

Parsons (Arthur L.).

1. Recent developments in the gypsum industry in New York State.

N. Y. State Mus., 54th Ann. Rept., vol. 1, pp. r 177-r 183, 1902.

2. The gypsum deposits of New York state.

Abstract: Science, new ser., vol. 19, pp. 855-856, 1904.

3. Peat: its formation, uses, and occurrence in New York.

N. Y. State Mus., 57th Ann. Rept., vol. 1, pp. 15-88, 1905.

4. Notes on the gypsum industry in New York.

N. Y. State Mus., 57th Ann. Rept., vol. 1, pp. 89-157, 3 pls., 1905.

Parsons (H. F.) and **Liddell** (Charles A.).

1. The coal and mineral resources of Routt County [Colorado].

Colo. Sch. Mines, Bull. vol. 1, no. 4, pp. 47-59, illus., 1903.

Describes the geology, the location of the coal districts, the character and occurrence of the Cretaceous coals, and the occurrence of other mineral deposits, chiefly gold.

Patten (William).

1. New facts concerning Bothriolepis.

Biological Bulletin, vol. 7, pp. 113-124, 6 figs., 1904.

2. Studies relating to the origin of vertebrates.

Abstract: Carnegie Inst. of Wash., Yearb. no. 3, 1904, p. 140, 1905.

Outlines work upon the ostracoderms and their systematic position.

Patton (Horace Bushnell).

1. Abstracts of papers read before Section E of the American Association for the Advancement of Science, August 26-29, 1901.

Science, new ser., vol. 14, pp. 794-800, 1901.

2. Synopsis of paper on the development of pseudomorphs.

Colo. Sci. Soc., Proc., vol. 7, pp. 103-107, 7 figs., 1903.

Discusses the methods of alteration of minerals and describes dolomite and calcite crystals from Colorado.

3. Fault-planes in the Dakota fire-clay beds at Golden, Colorado.

Abstract: Geol. Soc. Am., Bull., vol. 15, p. 583, 1904.

4. Faults in the Dakota formation at Golden, Colorado.

Colo. Sch. Mines, Bull., vol. 3, no. 1, pp. 26-32, 2 figs., 1905.

Patton (Horace Bushnell)—Continued.

5. Lecture notes on crystallography. (Revised edition, largely rewritten.)

New York, D. Van Nostrand Company, 1905. 47 pp.

Patton (Horace Bushnell), **Diller** (Joseph Silas) and.

1. The geology and petrography of Crater Lake National Park.

See **Diller** (J. S.) and **Patton** (H. B.), 1.

Payne (Henry M.).

1. The Tug River coal field [West Virginia]. A description of the general geology of the region and of the qualities of the coal.

Mines & Minerals, vol. 25, pp. 391–393, 3 figs., 1905.

Peale (A. C.).

1. The classification of mineral waters with especial reference to the characteristics and geographic distribution of the medicinal springs of the United States.

Cohen's System of Physiologic Therapeutics, vol. 9, pp. 299–365, 1902.

Pearce (Richard).

1. Notes on the occurrence of selenium with pyrite rich in gold and silver [from Mexico], and remarks on a gold nugget from Montana.

Colo. Sci. Soc., Proc., vol. 6, pp. 157-159 [1902].

Pearson (Herbert W.).

1. Oscillations in the sea-level.

Geol. Mag., new ser., dec. 4, vol. 8, pp. 167-174, 223–231, 253–265, 1901.
Contains discussions of certain observations in North America.

2. A nebulo-meteoric hypothesis of creation. Revised and edited by William F. Phelps.

Duluth, Minn., J. J. LeTourneau & Co., 1902. 38 pp., 2 figs.

3. The place of the great raised beaches in geology.

Assoc. Eng. Soc., Jour., vol. 32, pp. 78–90, 2 figs., 1904.
Discusses the occurrence and elevation of raised beaches, the explanation of subsidences and elevations, and the formation and location of coal mines.

Pearson (Karl).

1. The fossil man of Lansing, Kansas.

Nature, vol. 68, p. 7, 1903.
Discusses in the light of measurements of the bones the height of the individual.

Peck (Frederick B.).

1. Preliminary notes on the occurrence of serpentine and talc at Easton, Pa.

N. Y. Acad. Sci., Annals, vol. 13, pp. 419–430, 1 pl., 2 figs., 1901.
Describes the general geology and structure of the region and the occurrence of the crystalline rocks and the alteration products.

2. The basal conglomerate in Lehigh and Northampton counties, Pennsylvania.

Abstract: Science, new ser., vol. 17, p. 291, 1903; Eng. & Mg. Jour., vol. 75, p. 154, 1903.
Describes its occurrence and characters.

3. Basal conglomerate in Lehigh and Northampton counties, Pennsylvania.

Geol. Soc. Am., Bull., vol. 14, pp. 518–521, 1904.
Describes the character and occurrence of this formation in the area under consideration.

4. The Atlantosaur and Titanotherium beds of Wyoming.

Wyoming Hist. & Geol. Soc., Proc. & Coll., vol. 8, pp. 25–41, 5 pls., 1904.
Describes a geologic excursion in this region. Includes observations on the geology and paleontology of Jurassic and Cretaceous strata.

5. The cement belt in Lehigh and Northampton counties of Pennsylvania. A description of the geological formations.

Mines & Minerals, vol. 25, pp. 53–57, 6 figs., 1904.
Describes the physiographic features and the general stratigraphy of the region and the character and occurrence of the cement rock.

Peck (Frederick)—Continued.

6. The talc deposits of Phillipsburg, N. J., and Easton, Pa.

N. J. Geol. Surv., Ann. Rept. for 1904, pp. 161-185, 3 pls., 1905.

Describes the occurrence, quarrying, and uses of talc deposits, and their character and geologic relations.

Peckham (Herbert E.).

1. On the bituminous deposits situated at the south and east of Cardenas, Cuba.

Am. Jour. Sci., 4th ser., vol. 12, pp. 33-41, 2 figs., 1901.

Describes the occurrence and extent of these bituminous deposits.

Peckham (S. F.).

1. [Remarks on paper by Herbert E. Peckham on the bituminous deposits near Cardenas, Cuba.]

Am. Jour. Sci., 4th ser., vol. 12, p. 41, 1901.

Peet (Charles Emerson).

1. Glacial and post-Glacial history of the Hudson and Champlain valleys.

Jour. Geol., vol. 12, pp. 415-469, 617-660, 27 figs., 1904.

Penck (Albrecht).

1. Climatic features in the land surface.

Am. Jour. Sci., 4th ser., vol. 19, pp. 165-174, 1905.

Discusses the shaping of the earth's surface by river, glacial, and eolian agencies as influenced by climate conditions.

Penfield (Samuel L.).

1. On the chemical composition of childrenite.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 124-125, 1901. (From Am. Jour. Sci., vol. 19, pp. 315-316, 1880.)

2. On the chemical composition of amblygonite.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 121-123, 1901. (From Am. Jour. Sci., vol. 18, pp. 295-301, 1879.)

3. On spangolite, a new copper mineral.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 168-175, 1901. (From Am. Jour. Sci., vol. 39, pp. 370-378, 1890.)

4. On pearcite, a sulpharsenite of silver.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 252-260, 1901. (From Am. Jour. Sci., vol. 2, pp. 17-20, 1896.)

5. On the chemical composition of hamlinite and its occurrence with bertrandite at Oxford County, Maine.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 287-290, 1901. (From Am. Jour. Sci., vol. 4, pp. 313-316, 1897.)

6. Tables of minerals, including the uses of minerals and statistics of the domestic production.

New Haven, Conn., 1903. 77 pp.

7. On crystal drawing.

Am. Jour. Sci., 4th ser., vol. 19, pp. 39-75, 59 figs., 1905.

Describes methods of representing crystals.

Penfield (Samuel L.) and **Foote** (H. W.).

1. On bixbyite, a new mineral.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 283-286, 1901. (From Am. Jour. Sci., vol. 4, pp. 105-107, 1897.)

2. On clinohedrite, a new mineral from Franklin, N. J.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 291-296, 1901. (From Am. Jour. Sci., vol. 5, pp. 289-293, 1898.)

Penfield (Samuel L.) and **Ford** (W. E.).

1. On calaverite.

Am. Jour. Sci., 4th ser., vol. 12, pp. 225-245, 30 figs., 1901.

Describes occurrence and crystallographic characters of the material.

Penfield (S. L.) and **Jamieson** (G. S.).

1. On tychite, a new mineral from Borax Lake, California, and on its artificial production and its relations to northupite.

   Am. Jour. Sci., 4th ser., vol. 20, pp. 217-224, 1905. Zeitschr. f. Krystall. u. Min., Bd. 41, pp. 235-242, 1905 [German translation].

   Describes the occurrence, character, and composition of tychite, a new mineral from California and its relation to northupite.

Penfield (Samuel L.) and **Pirsson** (L. V.).

1. Contributions to mineralogy and petrography, from the laboratories of the Sheffield Scientific School of Yale University.

   Yale Bicentennial publications. Charles Scribner's Sons, New York. August, 1901. 482 pp. Abstract: Am. Geol., vol. 28, pp. 322-323, 1901: Am. Jour. Sci., 4th ser., vol. 12, p. 398, 1901.

Penfield (Samuel L.) and **Pratt** (J. H.).

1. On the occurrence of thaumasite at West Paterson, New Jersey.

   Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 246-251, 1901. (From Am. Jour. Sci., vol. 1, pp. 229-233, 1896.)

Penfield (Samuel L.) and **Warren** (C. H.).

1. Some new minerals from the zinc mines at Franklin, N. J., and note concerning the chemical composition of ganomalite.

   Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 325-342, 1901. (From Am. Jour. Sci., vol. 8, pp. 339-353, 1899.)

Penfield (S. L.), **Hillebrand** (W. F.) and.

1. Some additions to the alunite jarosite group of minerals.

   See **Hillebrand** (W. F.) and **Penfield** (S. L.), 1.

Penfield (S. L.), **Wells** (H. L.) and.

1. On a new occurrence of sperrylite.

   See **Wells** (H. L.) and **Penfield** (S. L.), 1.

Penhallow (D. P.).

1. Notes on the North American species of Dadoxylon, with special reference to type material in the collections of the Peter Redpath Museum, McGill College.

   Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 6, sect. 4, pp. 51-97, 18 figs., 1900.

2. A decade of North American Paleobotany, 1890-1900.

   Science, new ser., vol. 13, pp. 161-176, 1901.

   Presidential address before the Society of Plant Morphology and Physiology.

3. Osmundites skidegatensis n. sp.

   Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 3-30, 6 pls., 3 figs., 1902.

   Describes megascopic characters and microscopic structure of this fossil plant.

4. Notes on Cretaceous and Tertiary plants of Canada.

   Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 8, sect. 4, pp. 31-92, 10 pls., 8 figs., 1902.

5. Notes on Tertiary plants.

   Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 9, sect. 4, pp. 33-71, 29 figs., 1903.

   Gives descriptions of plants, especially of internal structure as revealed by microscopic sections, of early Tertiary age, based upon material obtained by the British North American Boundary Commission.

6. Notes on Tertiary plants from Canada and the United States.

   Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 10, sect. 4, pp. 57-76, 1904.

   Describes two new species and gives notes upon the occurrence of a number of others in Tertiary and Pleistocene deposits.

7. A blazing beach.

   Science, new ser., vol. 22, pp. 794-796, 1905.

   Describes burning of gas upon the beach at Kittery Point and explains its cause.

Penhallow (D. P.) and **Ami** (H. M.).

1. Determinations of fossil plants from various localities in British Columbia and the Northwest territories, with notes on the geological horizons indicated.

   Can. Geol. Surv., Summ. Rept. for 1904, pp. 389-392, 1905.

Penrose (R. A. F., jr.).

1. Present condition of gold mining in Arctic America.

   Eng. & Mg. Jour., vol. 76, pp. 807-809, 852-853, illus., 1903.

Peppel (S. V.).

1. Gypsum deposits in Ohio.

   U. S. Geol. Surv., Bull. no. 223, pp. 38-44, 3 pls., 1904.
   Describes character and distribution, economic development, and geologic relations of gypsum deposits occurring in Silurian strata of Ohio.

Peppel (S. V.), **Orton** (Edward, jr.) and.

1. The lime resources of Ohio available for Portland-cement manufacture.

   See **Orton** (Edward, jr.) and **Peppel** (S. V.), 1.

Perkins (George H.).

1. Report on the marble, slate, and granite industries of Vermont.

   Vt. Geol. Surv., Rept. State Geol., 68 pp., 23 figs., 1898.
   Describes occurrence and geologic position of the marbles, slates, and granites of Vermont.

2. Report of State geologist on the mineral resources of Vermont, 1899-1900.

   Burlington, Vermont, 1900. 83 pp., 29 figs.
   Describes the occurrence of copper, slate, and building and ornamental stones.

3. Sketch of the life of Zadock Thompson.

   Am. Geol., vol. 29, pp. 65-70, por., 1902; Rept. Vt. State Geol., III, pp. 7-13, por., 1902.

4. Report of the State geologist on the mineral industries and geology of certain areas of Vermont.

   Vt. Geol. Surv., Rept. III (of this series), 191 pp., 64 pls., 1902.

5. List of reports on the geology of Vermont, 1845-1900 [and] List of publications on the geology of Vermont.

   Vt. Geol. Surv., Rept. State Geol., III, pp. 14-21, 1902.

6. Report on mineral industries [Vermont].

   Vt. Geol. Surv., Rept. State Geol., III, pp. 31-45, 3 pls., 1902.
   Discusses the occurrence of minerals and building and ornamental stones.

7. The geology of Grand Isle [Vermont].

   Vt. Geol. Surv., Rept. State Geol., III, pp. 102-173, 43 pls., 2 figs., 1902.
   Describes the geographic and geologic occurrence and history of the formations of this island.

8. Notes on the wells, springs, and general water resources of Vermont.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 73-93, 1904.

9. List of works on the geology of Vermont.

   Vt. Geol. Surv., Rept. State Geol., IV, pp. 16-21, 1904.

10. Mineral resources of Vermont.

    Vt. Geol. Surv., Rept. State Geol., IV., pp. 22-66, 33 pls., 1904.
    Reviews the economic resources and the mining and quarrying industries of Vermont.

11. Geology of Grand Isle County [Vermont].

    Vt. Geol. Surv., Rept. State Geol., IV, pp. 103-143, 33 pls., 1 fig., 1904.
    Describes the topographic and physiographic features and general geology, and the occurrence, character, and relations of Ordovician strata and Glacial deposits.

12. On the lignite or brown coal of Brandon and its fossils.

    Vt. Geol. Surv., Rept. State Geol., IV, pp. 153-162, 1 fig., 1904.
    Gives a historical sketch of the investigations upon the lignite fossils.

13. Description of species [of fossil fruits] found in the Tertiary lignite of Brandon, Vermont.

    Vt. Geol. Surv., Rept. State Geol., IV, pp. 174-212, 7 pls., 1904.

14. Hydrology of Vermont. A summary of investigations upon the drinking waters of Vermont.

    Vt. Geol. Surv., Rept. State Geol., IV, pp. 213-227, 1904.

Perkins (George H.)—Continued.

15. Underground waters of eastern United States: Vermont.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 60–67, 1 fig., 1905.
Describes the water supply of Vermont.

16. Mineral resources of Vermont.

Am. Mg. Cong., 7th Ann. Sess., Rept. of Proc., pp. 161–165, 1905.

17. Tertiary lignite of Brandon, Vermont, and its fossils.

Géol. Soc. Am., Bull., vol. 16, pp. 499–516, 2 pls. and 1 fig., 1905.
Gives an account of the location, extent, and character of a deposit of Tertiary lignite in Vermont, and describes the fossils obtained from it.

Perkins (W. R.), **Logan** (W. N.) and.

1. The underground waters of Mississippi, a preliminary report.

See **Logan** (W. N.) and **Perkins** (W. R.), 1.

Perry (Joseph H.).

1. Notes on the geology of Mount Kearsarge, New Hampshire.

Jour. Geol., vol. 11, pp. 403–412, 2 figs., 1903.
Describes the petrologic characters of the rocks composing this mountain.

2. Geology of the Monadnock Mountain, New Hampshire.

Jour. Geol., vol. 12, pp. 1–14, 5 figs., 1904.
Describes character, occurrence, and relations of the granites, schists, and other rocks of the Monadnock Mountain, and discusses their age and the reasons for the survival of the mountain.

Perry (Joseph H.) and **Emerson** (Benjamin K.).

1. The geology of Worcester, Massachusetts.

Worcester Nat. Hist. Soc., 166 pp., illus., 1903.
Describes character, occurrence, and relations of rocks of Worcester, and gives an account of the general geology of the surrounding region.

Peter (Alfred M.).

1. Report of the Division of Chemistry [of the Kentucky Agricultural Experiment Station].

Ky. Agric. Exp. Sta., 13th Ann. Rept., for the year 1900, pp. xi–xxxiv [1904?].
Includes chemical analyses of crude petroleum, phosphatic limestone, and mineral waters.

Peters (W. J.).

1. Itinerary and topographic methods [of a reconnaissance in northern Alaska].

U. S. Geol. Surv., Professional Paper no. 20, pp. 18–25, 1904.

Peterson (O. A.).

1. Osteology of Oxydactylus, a new genus of camels from the Loup Fork of Nebraska, with descriptions of two new species.

Carnegie Mus., Ann., vol. 2, pp. 434–476, 12 pls., 3 figs., 1904.

2. Recent observations upon Dæmonelix.

Science, new ser., vol. 20, pp. 344–345, 1904.

3. Description of new rodents and discussion of the origin of Dæmonelix.

Carnegie Mus., Mem., vol. 2, pp. 139–202, 5 pls., 11 figs., 1905.

4. Preliminary note on a gigantic mammal from the Loup Fork beds of Nebraska.

Science, new ser., vol. 22, pp. 211–212, 1905.
Notes the occurrence and gives a brief description of Dinochœrus hollandi n. gen. and sp.

5. A correction of the generic name (Dinochœrus) given to certain fossil remains from the Loup Fork Miocene of Nebraska.

Science, new ser., vol. 22, p. 719, 1905.
Proposes the name Dinohyus for Dinochœrus (preoccupied).

Peterson (O. A.) and **Gilmore** (C. W.).

1. Elosaurus parvus; a new genus and species of the sauropoda.

Carnegie Mus., Annals, vol. 1, no. 3, pp. 490–499, 1 pl., 10 figs., 1902.

Phalen (W. C.).

1. Notes on the rocks of Nugsuaks Peninsula and its environs, Greenland.

Smith. Misc. Coll., vol. 45, pp. 183-212, 3 pls., 1904.
Describes characters and occurrence of rocks from northern Greenland.

2. A new occurrence of unakite—a preliminary paper.

Smith. Misc. Coll., vol. 45 (Quart. Issue, vol. 1, pts. 3 and 4), pp. 306-316, 3 pls., 1 fig., 1904.
Describes the occurrence and characters of unakite and associated rocks at Milams Gap, Virginia.

Phillips (Alexander H.).

1. Radium in an American ore.

Am. Phil. Soc., Proc., vol. 43, pp. 157-160, 1904.
Describes the occurrence and composition of carnotite from Utah and Colorado, and the extraction of radium therefrom.

Phillips (William Battle).

1. Texas petroleum.

Texas Univ. Min. Surv., Bull. no. 1, pp. 1-102, 1901.
Describes the nature and origin of petroleum and the oil and gas-bearing horizons of Texas.

2. The Beaumont oil field, Texas.

Eng. & Mg. Jour., vol. 71, pp. 175-176, 1901.
Contains notes on the geology of the region.

3. The zinc-lead deposits of southwest Arkansas.

Eng. & Mg. Jour., vol. 71, pp. 431-432, 1901.
Contains brief notes on the character and occurrence of the ore.

4. The bat guano caves of Texas.

Mines & Minerals, vol. 21, pp. 440-442, 6 figs., 1901.
Describes occurrence and chemical character of the material.

5. Report of progress for 1901. Sulphur, oil, and quicksilver in trans-Pecos Texas.

Texas Univ. Mineral Surv., Bull. no. 2, 43 pp., 12 pls., map, 1902.
Contains general geologic notes on certain State lands, a description of the sulphur deposits of El Paso County, and of the quicksilver deposits of Brewster County, and includes reports by E. M. Skeates.

6. Coal, lignite, and asphalt rocks [Texas].

Texas Univ. Mineral Surv., Bull. no. 3, 137 pp., 26 figs., 11 pls., 1902.
Describes the character and occurrence of the coals, lignites, and asphalts and associated rocks at various localities in the State. Portions of the report were prepared by R. C. Brooks, B. F. Hill, and H. W. Harper.

7. Report of progress of the University of Texas Mineral Survey for the year ending December 31, 1903.

Tex. Univ. Min. Surv., Bull. no. 7, 14 pp., 1904.
Gives an outline of the geologic work of the survey.

8. A new quicksilver field in Brewster County, Texas.

Eng. & Mg. Jour., vol. 77, pp. 160-161, 1904.
Describes the occurrence of the ore and the general geology of the district in which it occurs.

9. Lead ore in Burnett County, Texas.

Eng. & Mg. Jour., vol. 77, p. 364, 1904.
Describes the occurrence of lead ore and gives observations upon the geology of the region.

10. Extension of the quicksilver district in Brewster County, Texas.

Eng. & Mg. Jour., vol. 78, p. 212, 1904.

11. Condition of the quicksilver industry in Brewster County, Texas.

Eng. & Mg. Jour., vol. 78, pp. 553-554, 1904.
Contains notes on the occurrence of the quicksilver ores of this region.

12. The coal, lignite, and asphalt rocks of Texas.

Western Soc. Engrs., Jour., vol. 9, pp. 571-592, 1 pl., 1904.
Describes the occurrence of coal, lignite, and asphalt in Texas.

Phillips (William Battle)—Continued.

13. A coking coal in Chihuahua [Mexico].

Eng. & Mg. Jour., vol. 79, pp. 661-662, 1 fig., 1905.

Describes the occurrence, character, and geological relations of coal beds in Chihuahua, Mexico.

14. The quicksilver deposits of Brewster County, Texas.

Econ. Geol., vol. 1, pp. 155-162, 3 pls., 1905.

Describes the general geology, and the character, occurrence, and relations of the ore deposits of cinnabar.

Pierce (S. J.).

1. The Cleveland water-supply tunnel [Ohio].

Am. Geol., vol. 28, pp. 380-385, 1901.

Describes the quicksands and clays and other material penetrated in driving this tunnel.

Pilsbry (Henry A.).

1. Crustacea of the Cretaceous formation of New Jersey.

Phil. Acad. Nat. Sci., Proc., 1901, pp. 111-118, 1 pl., 1901.

Piper (C. V.).

1. The basalt mounds of Columbia lava.

Science, new ser., vol. 21, pp. 824-825, 1905.

Describes the occurrence of these mounds in eastern Washington and their nature, and discusses their origin.

Pirsson (Louis Valentine).

1. Petrography of the rocks of Yogo Peak [Montana].

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 436-456, 1901. (Abstract from U. S. Geol, Surv., 20th Ann. Rept., pt. 3, pp. 471-488, 1900.)

2. On mordenite.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 176-182, 1901. (From Am. Jour. Sci., vol. 40, pp. 232-237, 1890.)

3. On the petrography of Square Butte in the Highwood Mountains of Montana.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 415-435, 1901. (From Geol. Soc. Am. Bull., vol. 6, pp. 389-422, 1895.)

4. Petrography and geology of the igneous rocks of the Highwood Mountains, Montana.

U. S. Geol. Surv., Bull. no. 237, 208. pp., 7 pls. and 8 figs., 1905.

5. The petrographic province of central Montana.

Am. Jour. Sci., 4th ser., vol. 20, pp. 35-49, 1905.

Defines the province as shown by various evidences of consanguinity, gives its general law, and describes the geographic arrangement of the magmas, their differentiation, and types.

Pirsson (L. V.) and **Washington** (H. S.).

1. Contributions to the geology of New Hampshire. I. Geology of the Belknap Mountains.

Am. Jour. Sci., 4th ser., vol. 20, pp. 344-352, 1 pl. (map), 1905.

Describes the occurrence and characters of a group of igneous rocks.

Pirsson (Louis V.), **Cross** (Whitman), **Iddings** (Joseph P.), and **Washington** (Henry S.).

1. A quantitative chemico-mineralogical classification and nomenclature of igneous rocks.

2. Quantitative classification of igneous rocks.

See **Cross** (W.), **Iddings** (J. P.), **Pirsson** (L. V.), and **Washington** (H. S.), 1, 2.

Pirsson (Louis V.), **Penfield** (Samuel L.) and.

1. Contributions to mineralogy and petrography, from the laboratories of the Sheffield Scientific School of Yale University.

See **Penfield** (S. L.) and **Pirsson** (L. V.), 1.

Pirsson (Louis V.), **Weed** (Walter H.) and.

1. Missourite, a new leucite rock from the Highwood Mountains of Montana.

See **Weed** (Walter H.) and **Pirsson** (Louis V.), 1.

2. Geology of the Shonkin Sag and Palisade Butte laccoliths in the Highwood Mountains of Montana.

See **Weed** (W. H.) and **Pirsson** (L. V.), 2.

Plotts (William).

1. Origin of petroleum, coal, etc.; being an expert treatise on the actual occurrence of those products in strata of the earth crust.

Whittier, California, 1905. 29 pp. [Private publication.]
Discusses the occurrence of petroleum and coal, and the reasons therefor.

Plumb (Carlton H.).

1. The Tercio coal mining district, Colorado.

Drury Coll., Bradley Geol. Field Station, Bull., vol. 1, pp. 94-100, 1905.
Contains notes on the occurrence and character of the coal seams.

Pompeckj (J. F.).

1. Jura-fossilien aus Alaska.

Kais. Russ. Mineralog. Gesell., St. Petersburg, Verh., ser. 2, Band. 38, pp. 239-282, 3 pls., 1900.
Abstract: Am. Nat., vol. 35, pp. 420-421, 1901.

Poole (Henry S.).

1. Stigmaria structure.

Nova Scotian Inst. Sci., Trans., vol. 10, pp. 345-347, 2 pls., 1902.

2. The coal-fields of New Brunswick, Canada.

Inst. Mg. Engrs. [England]. Trans., vol. 23, pp. 40-47, 1902.
Discusses the geologic occurrence of coal in this area.

3. The coal problem in New Brunswick.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 204-206, 1902.
Discusses possibilities of coal production in the province.

4. Notes on Dr. Ami's paper on Dictyonema slates of Angus Brook, New Canaan, and Kentville, N. S.

Nova Scotian Inst. Sci., Proc. & Trans., vol. 10, pp. 451-454, 1903.

5. Notes on the geology of Anthracite, Alberta.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 147-149, 1903.
Describes geologic features developed by the coal mining operations.

6. The Carboniferous rocks of Chignecto Bay.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 377-382, 1903.
Describes results of geologic examination of the Carboniferous area of this region.

7. A submerged tributary to the great pre-Glacial river of the Gulf of St. Lawrence.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 9, sect. 4, pp. 143-147, 1 fig., 1903.

8. Report on the coal prospects of New Brunswick.

Can. Geol. Surv., Ann. Rept., new ser., vol. 13, 26 pp., 1903.
Describes the geologic structure of the Carboniferous field in New Brunswick, its correlation with that of Nova Scotia, and the probable location of coal beds and their character. In an appendix gives detailed records of borings.

9. A trip to West Virginia.

Nova Scotia Mg. Soc., Jour., vol. 8, pp. 127-131, 1904.
Includes observations upon the coals and coal fields of West Virginia.

10. Report on the Pictou coal field of Nova Scotia.

Can. Geol. Surv., Ann. Rept., vol. 14, pt. M, 38 pp., 1 map, 1904.
Describes the structure and stratigraphy of the field, and the occurrence and character of the coal seams, and the mining operations.

Poole (Henry S.)—Continued.

11. Is there coal under Prince Edward Island?

Nova Scotian Inst. Sci., Proc. & Trans., vol. 11, pp. 1-7, 1905.

Discusses the indications afforded by the geological structure of the island and adjoining regions as to the presence of coal in the strata underlying the island.

Porter (Fred B.).

1. Analyses of the Mississippian (Subcarboniferous) limestone from the Atchison [Kansas] prospect well.

Kans. Acad. Sci., Trans., vol. 17, p. 52, 1901.

Porter (T. C.).

1. Volcanic dust from the West Indies.

Nature, vol. 66, pp. 131-132, 2 figs., 1902.

Describes the characters of volcanic dust derived from recent eruptions.

Powers (H. C.).

1. The smoking bluffs of the Missouri River region.

Sioux City Acad. Sci. and Letters, vol. 1, pp. 57-60, 1904.

Describes the phenomenon and explains it as due to disintegration under atmospheric action of the iron pyrites in Cretaceous deposits.

Prather (John K.).

1. On the fossils of the Texas Cretaceous, especially those collected at Austin and Waco.

Tex. Acad. Sci., Trans., vol. 4, pp. 85-87, 1901.

Discusses the occurrence of fossils and gives faunal lists.

2. A preliminary report on the Austin chalk underlying Waco, Texas, and the adjoining territory.

Tex. Acad. Sci., Trans., vol. 4, pt. 2, no. 8, pp. 1-8, [115-122], 1 pl., 1902.

Describes the lithology and stratigraphy of this formation and the underlying marl.

2. Glauconite.

Jour. Geol., vol. 13, pp. 509-513, 1 pl., 1905.

Discusses the occurrence, character, and origin of glauconite from the Cretaceous of New Jersey.

4. The Atlantic Highlands section of the New Jersey Cretacic.

Am. Geol., vol. 36, pp. 162-178, 3 pls., 1905.

Describes the occurrence, relations, and lithologic characters of Cretaceous formations in eastern New Jersey, and gives a list of the fossils from the Navesink marl.

Pratt (Joseph Hyde).

1. A peculiar iron of supposed meteoric origin from Davidson County, North Carolina.

Elisha Mitchell Sci. Soc., Jour., 17th year, pt. 2, pp. 21-26, 1901.

Describes character of the material and gives chemical analysis.

2. The occurrence and distribution of corundum in the United States.

U. S. Geol. Surv., Bull. no. 180, pp. 1-98, 14 pls., 14 figs., 1901.

Describes the modes of occurrence and distribution of corundum and the corundum localities in the United States.

3. On northupite; pirssonite, a new mineral; gay-lussite and hanksite from Borax Lake, San Bernardino County, California.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 261-274, 1901. (From Am. Jour. Sci., vol. 2, pp. 128-135, 1896.)

4. The mining industry in North Carolina during 1900.

N. C. Geol. Surv., Economic Papers, no. 4, 36 pp., 1901.

Contains notes on the occurrence of economic products and minerals.

5. Gold deposits of Arizona.

Eng. & Mg. Jour., vol. 73, pp. 795-796, 2 figs., 1902.

Presents a map showing the location of the various gold deposits and describes the occurrence of gold ores in certain districts.

Pratt (Joseph Hyde)—Continued.

6. Gold mining in the southern Appalachians.

Eng. & Mg. Jour., vol. 74, pp. 241-242, 1902.

7. Marble and talc of North Carolina.

Stone, vol. 24, pp. 145-149, 1902.
Describes the occurrence of the talc and accompanying marble.

8. The mining industry in North Carolina during 1901.

N. C. Geol. Surv., Economic Paper, no. 6, 102 pp., 1902.
Contains notes on the occurrence of economic products and minerals

9. The mining industry in North Carolina during 1902.

N. C. Geol. Surv., Economic Paper, no. 7, 27 pp., 1904.
Contains notes on the occurrence of economic products and minerals.

10. The mining industry in North Carolina during 1903.

N. C. Geol. Surv., Economic Paper no. 8, 74 pp., 1 pl. (map), 1904.

11. The mining industry in North Carolina during 1904.

N. C. Geol. Surv., Economic Paper no. 9, 95 pp., 1 pl. (map), 1905.

Pratt (Joseph Hyde) and **Foote** (H. W.).

1. On wellsite, a new material.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 275-282, 1901. (From Am. Jour. Sci., vol. 3, pp. 443-448, 1897.)

Pratt (Joseph Hyde) and **Lewis** (Joseph Volney).

1. Corundum and the peridotites of western North Carolina.

N. C. Geol. Surv., vol. 1, 464 pp., 45 pls., 35 figs., 1905.
Describes the geology, petrology, and mineralogy of the corundum-bearing rocks of western North Carolina, and the character and occurrence of corundum, chromite, and asbestos deposits, and discusses the origin of corundum.

Pratt (Joseph Hyde) and **Penfield** (S. L.).

1. On the occurrence of thaumasite at West Paterson, New Jersey.

See **Penfield** (S. L.) and **Pratt** (J. H.), 1.

Pratt (Joseph Hyde) and **Sterrett** (Douglass B.).

1. The tin deposits of the Carolinas.

N. C. Geol. Surv., Bull. no. 19, 64 pp., 8 figs., 1904.
Describes the occurrence, character, geologic relations, origin, and economic development of the tin-ore deposits of North Carolina and South Carolina.

Pratt (Joseph Hyde) **Struthers** (Joseph) and.

1. Tin.

See **Struthers** (Joseph) and **Pratt** (Joseph Hyde), 1.

Pressey (Henry Albert).

1. Hydrography of the southern Appalachian Mountain region. Part I.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 62, pp. 1-95, 25 pls., 1902.
Describes briefly the topography and geology of the region.

2. Hydrography of the southern Appalachian region. Part II.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 63, pp. 105-190, 19 pls., 1902.

3. Water powers of the State of Maine.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 69, 124 pp., 14 pls., 12 figs., 1902.

Pressey (H. A.) and **Myers** (E. W.).

1. Hydrography of the southern Appalachians.

Message from the President of the United States, transmitting a report of the Secretary of Agriculture in relation to the forests, rivers, and mountains of the southern Appalachian region (Senate Doc. no. 84, 57th Cong., 1st sess.), pp. 123-142, 10 pls., 1902.
Describes physiographic features of the region.

Pressey (Henry Albert) and others. New York City folio, New York-New Jersey.

See **Merrill** (F. J. H.) and others, 1.

Prest (Walter H.).

1. On drift ice as an eroding and transporting agent.

   Nova Scotian Inst. Sci., Proc. & Trans., vol. 10, pp. 333–344, 1902.

2. Supplementary notes on drift ice as a transporting agent.

   Nova Scotian Inst. Sci., Proc. & Trans., vol. 10, pp. 455–457, 1903.

Preston (C. H.).

1. Prof. W. H. Barris.

   Am. Geol., vol. 28, pp. 358–361, 1 pl., 1901.
   Gives a sketch of his life and work on the paleontology of Iowa.

Preston (H. L.).

1. Niagara meteorite.

   Jour. Geol., vol. 10, pp. 518–519, 1902.
   Describes a meteorite from North Dakota.

2. The Franceville [El Paso County, Colorado] meteorite.

   Jour. Geol., vol. 10, pp. 852–857, 3 figs., 1902.
   Describes the dimensions and physical characters of the meteorite.

3. Franceville meteorite.

   Rochester Acad. Sci., Proc., vol. 4, pp. 75–78, 1 pl., 1902.
   Describes characters and occurrence of this meteorite found in El Paso County, Colo., and notes other falls in the State.

4. Reed City [Michigan] meteorite.

   Jour. Geol., vol. 11, pp. 230–233, 2 figs, 1903; Rochester Acad. Sci., Proc., vol. 4, pp. 89–91, 1 pl., 1903.

Price (J. A.) and **Shaaf** (Albert).

1. Spy Run and Poinsett lake bottoms [Indiana].

   Ind. Acad. Sci., Proc. for 1900, pp. 179–181, 1901.
   Describes glacial phenomena.

2. Abandoned meanders of Spy Run Creek [Indiana].

   Ind. Acad. Sci., Proc. for 1900, pp. 181–184, 1 fig., 1901.
   Describes its drainage modifications.

Prichard (William A.).

1. Observations on Mother Lode gold deposits, California.

   Eng. & Mg. Jour., vol. 76, pp. 125–127, 1903; Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 454–466, 1904.
   Describes the geologic structure and occurrence of the ore deposits.

Prindle (Louis M.).

1. Gold placers of the Fairbanks district, Alaska.

   U. S. Geol. Surv., Bull. no. 225, pp. 64–73, 1 fig., 1904.
   Describes the general geology and the occurrence of placer gold and the mining operations.

2. The gold placers of the Fortymile, Birch Creek, and Fairbanks regions, Alaska.

   U. S. Geol. Surv., Bull. no. 251, 89 pp., 16 pls., 1905.
   Describes the topography, the general geology, the character and occurrence of the sedimentary and igneous rocks, and the occurrence and mining of gold-bearing placer gravels.

Prindle (Louis M.) and **Hess** (F. L.).

1. Rampart placer region [Alaska].

   U. S. Geol. Surv., Bull. no. 259, pp. 104–119, 1 fig., 1905.
   Describes the topography, drainage, and general geology of the region, and the occurrence and mining of placer gold.

Private-Deschanel (Paul).

1. L'État de Californie.

   Lyon, Soc. Géog., Bull., vol. 17, pp. 843–860, 1902.
   Discusses the general geologic structure and topography of California.

Probert (Frank H.).

1. Secondary enrichment.

Eng. & Mg. Jour., vol. 76, pp. 958-959, 5 figs., 1903.

Describes the general geology and the origin of the copper-ore deposits of the Clifton-Morenci district in Arizona.

Prosser (Charles S.).

1. The classification of the Waverly series of central Ohio.

Jour. Geol., vol. 9, pp. 205-231, 4 figs., 1901.

Reviews the various classifications of this series that have been published, describes the character and occurrence of the strata, and gives the author's classification.

2. [On the use of the term Bedford limestone.]

Jour. Geol., vol. 9, pp. 270-272, 1901.

Reviews an article by C. E. Siebenthal on the same subject, and considers the name Bedford as applied in Ohio should be accepted.

3. The Paleozoic formations of Allegany County, Maryland.

Jour. Geol., vol. 9, pp. 409-429, 4 figs., 1901.

Describes the character and occurrence of the various Paleozoic formations and discusses their probable correlations with New York and Pennsylvanian formations.

4. Names for the formations of the Ohio Coal Measures.

Am. Jour. Sci., 4th ser., vol. 11, pp. 191-199, 1901.

Reviews previous classification and nomenclature of the Coal Measures of Pennsylvania and West Virginia and presents a section and the classification of the Coal Measures of Maryland, which has been adopted for the Ohio Coal Measures.

5. Notes an the stratigraphy of the Mohawk Valley and Saratoga County [New York].

N. Y. State Mus., Bull. no. 34 (also in 54th Ann. Rept., vol. 1), pp. 469-482, 6 pls., 1902.

6. The Sunbury shale of Ohio.

Jour. Geol., vol. 10, pp. 262-312, 6 figs., 1902; Ohio State Univ. Bull., ser. 6, no. 13 (Geol. ser., no. 3), 1902.

Describes the character and occurrence of this formation and gives a historical review of the literature of the subject.

7. Revised classification of the upper Paleozoic formations of Kansas.

Jour. Geol., vol. 10, pp. 703-737, 1902.

Describes the lithologic characters of the formations and their stratigraphic relations.

8. The specimen of Nematophyton in the New York State Museum.

Am. Geol., vol. 29, pp. 372-377, 1902.

Contains notes on the occurrence and character of the material from the Devonian of New York.

9. Richard Burton Rowe.

Am. Geol., vol. 30, pp. 128-129, 1902.

Gives a sketch of his life.

10. The nomenclature of the Ohio geological formations.

Jour. Geol., vol. 11, pp. 519-546, 1903; Ohio State Univ. Bull., ser. 8, no. 3 (Geol. ser., no. 6), 1903.

Gives a table of the formations of the geological scale in Ohio and discusses their nomenclature and correlations.

11. Notes on the geology of eastern New York.

Am. Geol., vol. 32, pp. 381-384, 1903.

Discusses relations and nomenclature of Silurian and Devonian formations in eastern New York.

12. Description and correlation of the Romney formation of Maryland.

Jour. Geol., vol. 12, pp. 361-372, 1904.

Describes character and occurrence of the Romney formation and its members in Maryland, and discusses their correlation with Devonian formations of New York on stratigraphic and faunal evidence; discusses also the correlation of American Devonian formations with those of Europe.

13. The Delaware limestone.

Jour. Geol., vol. 13, pp. 413-442, 3 figs., 1905.

Discusses the nomenclature and correlation by previous writers, and describes the occurrence, character, and fossil contents of the Delaware limestone formation of Ohio.

Prosser (Charles S.)—Continued.

14. Notes on the Permian formations of Kansas.

Am. Geol., vol. 36, pp. 142-161, 1905.
Discusses conflicting views regarding the nomenclature of upper Carboniferous formations of Kansas and their correlation.

15. Revised nomenclature of the Ohio geological formations.

Ohio Geol. Surv., 4th ser., Bull. no. 7, 36 pp., 1905.
Gives a table of the geologic formations of Ohio and notes upon their nomenclature and classification.

Prosser (Charles S.) and **Beede** (J. W.).

1. Cottonwood Falls folio, Kansas.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 109, 1904.
Describes the physiography, the occurrence, character, geologic relations, and stratigraphy of Carboniferous formations, the geologic structure and economic resources.

Prosser (Charles S.) and **Cumings** (Edgar R.).

1. The Waverly formations of central Ohio.

Am. Geol., vol. 34, pp. 335-361, 3 pls., 1904.
Describes the occurrence, character, and relations of the various members of the Waverly series in central Ohio, giving numerous detailed sections of the strata.

Prutzman (Paul).

1. Production and use of petroleum in California.

Cal. State Mg. Bur., Bull. no. 32, 230 pp., 64 figs., 1904.
Describes the general geology, and the occurrence, character, production, and utilization of petroleum from southern California.

Pultz (John Leggett).

1. The Big Stone Gap coal field of Virginia and Kentucky.

Eng. Mag., vol. 28, pp. 71-85, 11 figs., 1904.
Includes a description of the geologic conditions existing in the Big Stone Gap coal field of Virginia and Kentucky, and the occurrence and character of workable coal seams, with a generalized section of the strata.

Purdue (A. H.).

1. Valleys of solution in northern Arkansas.

Jour. Geol., vol. 9, pp. 47-50, 2 figs., 1901.
Describes the character and occurrence of these valleys and discusses their origin.

2. Illustrated note on a miniature overthrust fault and anticline.

Jour. Geol., vol. 9, pp. 341-342, 1 fig., 1901.
Describes a miniature anticline passing into a reversed fault at Ozark, Ark.

3. Physiography of the Boston Mountains, Arkansas.

Jour. Geol., vol. 9, pp. 694-701, 2 figs., 1901.
Describes the structural and topographic features of the region.

4. The saddle-back topography of the Boone chert region, Arkansas.

Abstract: Science, new ser., vol. 17, p. 222, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

5. Notes on the wells, springs, and general water resources of Arkansas.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 374-388, 1904.

6. Concerning the natural mounds.

Science, new ser., vol. 21, pp. 823-824, 1 fig., 1905.
Discusses the origin of these mounds.

7. Underground waters of eastern United States: northern Arkansas.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 188-197, 4 figs., 1905.
Describes the general geology, and discusses the relations of the underground water supply and the geological formations of the State of Arkansas north of the Arkansas River.

8. Water resources of the Winslow quadrangle, Arkansas.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 84-87, 1 fig., 1905.

9. Water resources of the contact region between the Paleozoic and Mississippi embayment deposits in northern Arkansas.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 88-119, 17 figs., 1905.
Includes an account of the geologic conditions of the area.

Purington (Chester Wells).

1. Economic geology. La Plata folio, Colo.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 60, 1899.

Describes the vein systems, the occurrence of gold and silver ores, the placer deposits, and the occurrence of coal.

2. The Contact, Nevada, quaquaversal.

Colo. Sci. Soc., Proc., vol. 7, pp. 127-138, 5 figs., 1903.

Describes physiographic features and the geologic structure of the region and the occurrence of ore bodies.

3. The Camp Bird mine, Ouray, Colorado, and the mining and milling of the ore.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 499-528, 10 figs., 1903.

Describes the general geology of the region, the system of veins and fissures, the occurrence of the ores, principally galena, and discusses the origin of the ore deposits.

4. Secondary enrichment.

Eng. & Mg. Jour., vol. 75, pp. 472-473, 1903.

5. The geological structure of the Camp Bird vein [Colorado].

Eng. & Mg. Jour., vol. 75, pp. 820-822, 2 figs., 1903.

Describes the veins and fissures and their rock contents, and the character and occurrence of the gold and silver ores.

6. Observations on gold deposits.

Eng. & Mg. Jour., vol. 75, pp. 854-855, 893-894, 929-931, 1903.

Discusses occurrence and origin of gold deposits in various regions of the world.

7. Geology of the Virginius mine [Colorado].

Eng. & Mg. Jour., vol. 76, p. 458, 1903.

Discusses the occurrence and origin of the gold ores.

8. Methods and costs of gravel and placer mining in Alaska.

U. S. Geol. Surv., Bull. no. 259, pp. 32-46, 1905.

9. Methods and costs of gravel and placer mining in Alaska.

U. S. Geol. Surv., Bull. no. 263, 273 pp., 42 pls., 49 figs., 1905.

10. The Camp Bird and Smuggler-Union fissures [Colorado].

Eng. & Mg. Jour., vol. 79, pp. 1243-1244, 1 fig., 1905.

Discusses fissuring in the San Juan Mountains region and its explanation.

11. Ore horizons in the veins of the San Juan Mountains, Colorado.

Econ. Geol., vol. 1, pp. 129-133, 1905.

Discusses the character, occurrence, and relations of metalliferous viens in this region.

Pynchon (W. H. C.).

11. Drilled wells of the Triassic area of the Connecticut Valley.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 65-94, 2 figs., 1905.

Includes an account of the general geology, the occurrence and character of Triassic rocks, and the geologic structure of the area.

Q.

Queneau (Augustin L.).

1. The gold sands of Cape Nome [Alaska].

Eng. Mag., vol. 23, pp. 497-510, 13 figs., 1902.

Describes physiographic features of the region and the occurrence of the beach and creek sands.

2. Size of grain in igneous rocks in relation to the distance from the cooling wall.

School of Mines Quart., vol. 23, pp. 181-195, 6 pls., 4 figs., 1902; Columbia Univ., Geol. Dept., Contr., vol. 9, no. 80, 1902. Abstract: N. Y. Acad. Sci., Annals, vol. 14, p. 163, 1901.

Discusses the mathematical treatment of the diffusion of heat and applies the theory to certain dike rocks.

R.

Rabot (Charles).

1. Géologie du Grönland nord-oriental.

Géographie, vol. 4, pt. 2, pp. 66-68, 3 figs., 1901.

Gives a brief account of the geology of Greenland.

Rafter (George W.).

1. Hydrology of the State of New York.

N. Y. State Mus., Bull. 85, 902 pp., 45 pls., 74 figs., and 4 maps, 1905.

Randolph (Beverley S.).

1. [Discussion of paper by Charles Catletton, "Coal outcrops."]

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 1005-1006, 1901.

Randolph (L. S.).

1. Virginia anthracite coal.

Cassier's Mag., vol. 27, pp. 328-336, 8 figs., 1905.
Includes notes on the occurrence and character of the coals in New River field in southwestern Virginia.

Rangel (M. F.).

1. Criadero de fierro del Cerro de Mercado, Durango [Mexico].

Mexico Inst. Geol., Bull. no. 16, pp. 3-14, 2 pls., 1902.
Discusses the occurrence of iron ore and associated rocks.

Ransome (Frederick Leslie).

1. A report on the economic geology of the Silverton quadrangle, Colorado.

U. S. Geol. Surv., Bull. no. 182, pp. 1-265, 16 pls., 23 figs., 1901.
Describes the lode fissures, the characters of the ores and of the stocks or masses, and the origin of the ore deposits. Includes detailed descriptions of special areas.

2. A peculiar clastic dike near Ouray, Colorado, and its associated deposit of silver ore.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 227-236, 2 figs., 1901.
Describes the occurrence, character, and origin of the dike and of the associated ore body.

3. The ore deposits of the Rico Mountains, Colorado.

U. S. Geol. Surv., 22d Ann. Rept., pt. 2, pp. 229-397, 16 pls., 33 figs., 1901.
Describes general geologic structure and relations of the region, the character and occurrence of ore-bearing veins and fissures, character, occurrence, and origin of the ore bodies and associated minerals, and the mining operations.

4. Recent progress in petrology.

Science, new ser., vol. 15, pp. 673-674, 1902.

5. Faulting and mountain structure in Arizona.

Abstract: Science, new ser., vol. 15, p. 711, 1902.

6. Geology of the Globe copper district, Arizona.

U. S. Geol. Surv., Professional Paper no. 12, 168 pp., 27 pls., 10 figs., 1903.
Gives an outline of the physiography of Arizona and topography and general geology of the Globe quadrangle, and describes the character and occurrence of igneous rocks and sedimentary strata of Cambrian, Devonian, Carboniferous, Eocene (?), and Quaternary age, the character, occurrence, and origin of the ores, chiefly gold, silver, and copper, and the mining operations.

7. Copper deposits of Bisbee, Ariz.

U. S. Geol. Surv., Bull. no. 213, pp. 149-157, 1903.
Describes the general geology of the region, the occurrence and origin of the ores, and the mining operations.

8. The copper deposits of Bisbee, Arizona.

Eng. & Mg. Jour., vol. 75, pp. 444-445, 2 figs., 1903.
Describes the geologic structure of the region and the character and occurrence of the ore deposits.

9. Genetic classification of ore deposits.

Abstract: Science, new ser., vol. 17, p. 542, 1903.

10. The geology and copper deposits of Bisbee, Arizona.

Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 618-642, 6 figs., 1904.
Describes the geography and general geology, the character, occurrence, and relations of the Paleozoic and Mesozoic sedimentary strata, the intrusions and deformation, the character, occurrence, and origin of the copper-ore deposits, and the mining operations.

Ransome (Frederick Leslie)—Continued.

11. The geology and ore deposits of the Bisbee quadrangle, Arizona.

U. S. Geol. Surv., Professional Paper no. 21, 168 pp., 29 pls., 5 figs., 1904.

Describes physiographic features and the general geology, the character, occurrence, and geological relations of pre-Cambrian Cambrian, Devonian, Carboniferous, and Cretaceous strata and igneous rocks, the geologic structure and history, and the character, occurrence, economic development, and origin of the copper-ore deposits.

12. The geographic distribution of metalliferous ores within the United States.

Mg. Mag., vol. 10, pp. 7-14, 1 pl., 1904.

Describes the physiographic divisions of the United States, and the occurrence and production of ores in them.

13. Globe folio, Arizona.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 111, 1904.

Describes the physiographic divisions of Arizona, the topography, climate, and vegetation and general geology of the area, the occurrence, character, and geological relations of pre-Cambrian, Cambrian, Devonian, Carboniferous, Tertiary, and Quaternary deposits and igneous rocks, the geologic structure and history, the occurrence, character, origin, geologic relations, and mining of the ores, chiefly gold, silver, and copper.

14. Bisbee folio, Arizona.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 112, 1904.

Describes the topography and drainage, the general geology, the character, occurrence, and relations of pre-Cambrian metamorphic rocks, Cambrian, Devonian, Carboniferous, and Cretaceous strata, Quaternary deposits, and igneous rocks, the geologic structure and its expression in topography, the geologic history, and the economic resources, principally copper ores.

15. The present standing of applied geology.

Econ. Geol., vol. 1, pp. 1-10, 1905.

Discusses the status of applied geology and certain phases of the question of the origin of ore deposits.

16. Silverton folio, Colorado. Economic geology of the quadrangle.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 120, pp. 26-34, 1905.

Describes the system of fissures, the relations of the ores to the fissures, the minerals occurring in the lodes, and the character, distribution, origin, and value of the ore deposits containing gold, silver, and lead.

17. Ore deposits of the Coeur d'Alene district, Idaho.

U. S. Geol. Surv., Bull. no. 260, pp. 274-393, 4 figs., 1905.

Describes the geography, general geology, and geological structure of the district, the history of the mining development, the production, character, and occurrence of lead-silver, gold, and copper deposits.

18. The Coeur d'Alene district.

Mg. Mag., vol. 12, pp. 26-32, 7 figs., 1905.

Contains notes on the geology of the region.

Ransome (Frederick Leslie), **Hillebrand** (W. F.) and.

1. On carnotite and associated vanadiferous minerals in western Colorado.

See **Hillebrand** (W. F.) and **Ransome** (F. L.), 1.

Ransome (Frederick Leslie), **Lindgren** (Waldemar) and.

1. Report of progress in the geological resurvey of the Cripple Creek district, Colorado.

See **Lindgren** (Waldemar) and **Ransome** (F. L.), 1.

2. The geological resurvey of the Cripple Creek district, Colorado

See **Lindgren** (W.) and **Ransome** (F. L.), 2.

Rath (C. M.), **Grider** (R. L.), **Bailey** (E. W.).

1. A garnetiferous bed in Golden Gate Canyon, Jefferson County, Colorado.

See **Bailey** (E. W.), **Rath** (C. M.), **Grider** (R. L.), 1.

Ravn (J. P. J.).

1. The Tertiary fauna at Kap Dalton in East Greenland.

   Meddelelser om Groenland, vol. 29, pp. 93-140, 3 pls., 1903: Copenhagen Univ., Mus. Min. et Geol., Comm., Paléont., no. 4, 1903.

   Reviews discoveries of fossils in Greenland and the geologic age of the formations from which they were obtained, describes a fauna, mainly molluscan, obtained from East Greenland and discusses its geologic horizon.

Raymond (Percy E.).

1. The Crown Point section [New York].

   Am. Pal., Bull. no. 14, pp. 3-44, 2 pls., map, 1902.

   Gives an historical sketch of previous work, describes sections of Ordovician strata, giving faunal lists, and several new species of fossils from this locality.

2. The faunas of the Trenton at the type section and at Newport, N. Y.

   Am. Pal., Bull. no. 17, pp. 13-26, 1903.

   Discusses the occurrence and range of faunules in Trenton sections.

3. The developmental changes in some common Devonian brachiopods.

   Am. Jour. Sci., 4th ser., vol. 17, pp. 279-300, 7 pls., 20 figs., 1904.

4. The Tropidoleptus fauna at Canandaigua Lake, New York, with the ontogeny of twenty species.

   Carnegie Mus., Annals, vol. 3, no. 1, pp. 79-177, 8 pls., 50 figs., 1904.

   Describes the developmental changes of some Devonian brachiopods from the Tripidoleptus fauna at Canandaigua Lake, New York, and gives a comparative faunal study of this faunule.

5. The trilobites of the Chazy limestone.

   Carnegie Mus., Annals, vol 3, pp. 328-386, 5 pls., 11 figs., 1905.

6. Note on the names Amphion, Harpina, and Platymetopus.

   Am. Jour. Sci., 4th ser., vol. 19, pp. 377-378, 1905.

7. The fauna of the Chazy limestone.

   Am. Jour. Sci., 4th ser., vol. 20, pp. 353-382, 1 fig., 1905.

   Describes the distribution, development, and faunal subdivisions of the Chazy formation, and the occurrence and range of its fossils.

Raymond (R. W.).

1. Recent contributions to the science of ore deposits.

   Min. Ind. for 1900, pp. 753-762, 1901.

   Gives a review and summaries of recent important papers on the origin of ore deposits.

2. [In discussion of paper by J. D. Irving on "Wolframite in the Black Hills of South Dakota."]

   Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 1025-1026, 1902.

3. Biographical notice of Clarence King.

   Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 619-650, por., 1903.

4. What is a fissure vein?

   Econ. Geol., vol. 1, pp. 169-172, 1905.

Raymond (William James).

1. Writings of James G. Cooper, M. D., on conchology and paleontology, with list of species described by him.

   Nautilus, vol. 17, pp. 6-12, 1903.

2. A new species of Pleurotoma from the Pliocene of California.

   Nautilus, vol. 18, pp. 14-16, 1904.

Read (Thomas Thornton).

1. Preliminary note upon the rare metals in the ore from the Rambler mine, Wyoming.

   Am. Jour. Sci., 4th ser., vol. 16, p. 268, 1903.

2. Nodular-bearing schists near Pearl, Colorado.

   Jour. Geol., vol. 11, pp. 493-497, 2 figs., 1903.

   Gives observations on the petrology of the area.

Read (Thomas Thornton)—Continued.

3. The alkali deposits of Wyoming.

Am. Geol., vol. 34, pp. 164–169, 1904.
Describes their occurrence and discusses their origin.

4. Copper mining in the Encampment, Wyoming, and Pearl, Colorado, districts.

Mg. Rep., vol. 50, pp. 462–463, 1904.
Describes the general geology and the occurrence and character of the copper ores.

5. The phase rule and conceptions of igneous magmas—their bearing on ore deposition.

Econ. Geol., vol. 1, pp. 101–118, 1905.

Reade (T. Mellard).

1. The evolution of earth structure, with a theory of geomorphic changes.

London, Longmans, Green & Co., 1903. xv, 342 pp., 40 pls.
Includes papers by the author on "Denudation of the two Americas" and "The north Atlantic as a geological basin," reprinted from the Proceedings of the Liverpool Geological Society, vol. 5, pts. 1 and 2, 1885 and 1886.

Reagan (Albert B.).

1. Geology of the Jemez-Albuquerque region, New Mexico.

Am. Geol., vol. 31, pp. 67–111, 7 pls., 1903.
Describes general geologic relations and structure, character, and occurrence of strata of Carboniferous, Mesozoic, Tertiary, and Quaternary age, geographic and physiographic features, and economic resources of this region.

2. Age of the lavas of the plateau region [New Mexico and Arizona].

Am. Geol., vol. 32, pp. 170–177, 1903.
Gives stratigraphic sections of strata of Permo-Carboniferous, Tertiary, and Quaternary age of this region and discusses age of included lava sheets.

3. Geology of the Fort Apache region in Arizona.

Am. Geol., vol. 32, pp. 265–308, 2 pls., 1 fig., 1903.
Describes geography, physiography, drainage, and general geological structure, occurrence, and character of strata of Archean, Algonkian, Silurian, Devonian, Tertiary, and Quaternary age, and intrusive rocks, and discusses origin of Quaternary and Tertiary deposits and the economic resources of the region.

4. The Jemez coal fields [New Mexico].

Ind. Acad. Sci. Proc., 1902, pp. 197–198, 1903.
Gives a short account of the geology and the occurrence and character of the coal strata.

5. Some geological observations on the central part of the Rosebud Indian Reservation, South Dakota.

Am. Geol., vol. 36, pp. 229–243, 1 pl. (map), 2 figs., 1905.
Describes the occurrence, character, and relations of the Cretaceous and Tertiary stratified deposits and physiographic features.

Redway (Jacques W.).

1. A great lava flood.

Am. Bur. Geog., Bull., vol. 2, pp. 157–163, 3 figs., 1901.
Defines types of volcanic outflows and describes the Tertiary lava flows of the Pacific region.

Reid (George D.).

1. The Burro Mountain copper district, New Mexico.
Eng. & Mg. Jour., vol. 74, pp. 778–779, 4 figs., 1902.

Reid (Harry Fielding).

1. De la progression des glaciers, leur stratification, et leurs veines bleues.
Intern. Cong. Géol., Compte Rendu, viii session, pp. 749–755, 1901.

2. The variations of glaciers, VI.
Jour. Geol., vol. 9, pp. 250–254, 1901.
Gives a summary of the Fifth annual report of the International Committee on glaciers.

3. The variations of glaciers.
Jour. Geol., vol. 10, pp. 313–317, 1902.
Gives a summary of the Sixth annual report of the International Committee on glaciers.

Reid (Harry Fielding)—Continued.

4. A reconnaissance of Mt. Hood and Mt. Adams.

Abstract: Science, new ser., vol. 15, p. 906, 1902.

5. The variation of glaciers, VIII.

Jour. Geol., vol. 11, pp. 285-288, 1903. Arch. d. Sci. phys. et nat., 4 pér., t. 14, pp. 301-302, 1902

Gives a summary of the seventh annual report of the International Committee on Glaciers and reports on the glaciers of the United States for 1902.

6. Notes on Mounts Hood and Adams and their glaciers.

Abstract: Geol. Soc. Am. Bull., vol. 13, p. 536, 1903.

7. Glaciers.

Mazama, vol. 2, no. 3, pp. 119-122, 1903.

Describes formation and phenomena of glaciers.

8. Les variations périodiques des glaciers. Etats-Unis. VIIIme rapport, 1902.

Arch. des Sci. phys. et nat., 4 pér., t. 16, pp. 92-94, 1903.

9. Les variations périodiques des glaciers. Etats-Unis. IXme rapport, 1903.

Arch. des Sci. phys. et nat., 4. pér., t. 18, pp. 191-193, 1904.

10. The variations of glaciers. IX.

Jour. Geol., vol. 12, pp. 252-263, 1904.

Gives a summary of the eighth annual report of the International Committee on glaciers. Includes observations on the glaciers of the United States.

11. The relation of the blue veins of glaciers to the stratification, with a note on the variations of glaciers.

Congr. géol. intern., Compte rendu IX. Sess., pp. 703-706, 1904.

12. The flow of glaciers and their stratification.

Appalachia, vol. 11, pp. 1-6, 2 pls., 1 fig., 1905.

13. The variations of glaciers. IX.

Jour. Geol., vol. 13, pp. 313-318, 1905.

Gives a summary of the ninth annual report of the International Committee on glaciers.

14. Records of seismographs in North America and the Hawaiian Islands. No. 1.

Terrestrial Magnetism and Atmospheric Electricity, vol. 10, pp. 81-96, 1905.

15. [In discussion of paper by R. S. Tarr, "Gorges and Waterfalls of central New York."]

Intern. Geog. Cong., Eighth, Rept., p. 137, 1905.

16. The reservoir lag in glacier variations.

Intern. Geog. Cong., Eighth, Rept., pp. 487-491, 1905.

17. The glaciers of Mt. Hood and Mt. Adams.

Mazama, vol. 2, pp. 195-200, 3 pls., 1905. Abstract: Intern. Geog. Cong., Eighth, Rept., p. 492, 1905.

Reid (John A.).

1. The igneous rocks near Pajaro [California].

Univ. Cal., Dept. Geol., Bull., vol. 3, pp. 173-190, 1 pl., 1902.

Describes geologic occurrence and petrographic characters of the granite rocks of the Coast Ranges of California.

2. Preliminary report on the building stones of Nevada, including a brief chapter on road metal.

Nev. Univ., Dept. Geol. & Mg., Bull., vol. 1, no. 1, 58 pp., 1904.

3. The structure and genesis of the Comstock lode.

Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 177-199, 2 figs., 1905.

Reitinger (J.), **Kraus** (E. H.) and.

1. Hussakite, a new mineral, and its relations to xenotime.

See **Kraus** (E. H.) and **Reitinger** (J.), 1.

Renault (B.).

1. Sur quelques microorganismes des combustibles fossiles.

Soc. de l'Ind. Min., Bull., 3d ser., vol. 13, livraison 4, pp. 865-1129, 34 figs., atlas of 9 pls., 1899; vol. 14, livraison 1, pp. 5-160, atlas of 16 pls., 1900.

Contains descriptions of fossils from the Coal Measures of the Appalachian region.

Rice (William North).

1. The physical geography and geology of Connecticut.

Conn. Bd. Agric., 37th Ann. Rept., pp. 94-113, 2 pls., 1904.

Describes the physiographic features of Connecticut and their relation to the geologic structure of the State.

2. The proper scope of geological teaching in the high school and academy.

Nat. Educ. Assoc., Proc. for 1903, pp. 853-856, 1904.

3. The classification of mountains.

Intern. Geog. Cong., Eighth, Rept., pp. 185-190, 1905.

Richards (Joseph W.).

1. "Mohawkite."

Am. Jour. Sci., 4th ser., vol. 11, pp. 457-458, 1901.

Gives results of the author's chemical studies, which prove the existence of the species termed mohawkite and of another species for which the name ledouxite is proposed.

Richards (Ralph W.).

1. A new habit for chalcopyrite.

Tufts Coll. Studies, no. 8, pp. 383-385, 1 fig., 1904; Am. Jour. Sci., 4th ser., vol. 17, pp. 425-426, 1 fig., 1904.

Describes occurrence and crystallographic features.

Richardson (C. H.).

1. Analysis of Washington [Vermont] marble, with notes upon the distribution and age.

Vt. Geol. Surv., Rept. State Geol., pp. 39-40, 1898.

2. The terranes of Orange County, Vermont.

Vt. Geol. Surv., Rept. State Geol., III, pp. 61-101, 15 pls., 1902.

Discusses the topographic and geologic features, the occurrence and characters of economic products, and the petrographic and chemical characters of the rocks.

Richardson (Clifford) and **Wallace** (E. C.).

1. Petroleum from the Beaumont, Texas, field.

Soc. Chem. Industry, Jour., vol. 20, pp. 690-693, 1901.

Discusses the occurrence, composition and refining of the oil of the Beaumont field.

Richardson (G. M.).

1. Edward Waller Claypole as a teacher.

Am. Geol., vol. 29, pp. 24-30, 1902.

Richardson (George Burr).

1. The misnamed Indiana anticline.

Jour. Geol., vol. 10, pp. 700-702, 1 fig., 1902.

Describes certain structural phenomena in Pennsylvania.

2. The upper Red Beds of the Black Hills.

Jour. Geol., vol. 11, pp. 365-393, 4 figs., 1903.

Describes physical characters, geographic extent, general geological relations, and stratigraphy of the Red Beds in the Black Hills, and discusses the origin of their color.

3. Indiana folio, Pennsylvania.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 102, 1904.

Describes physiographic features, the character, occurrence, and relations of Carboniferous strata, and general geologic structure, the character and occurrence of the coals, natural gas, and other economic resources.

Richardson (George Burr)—Continued.

4. Report of a reconnaissance in trans-Pecos Texas, north of the Texas and Pacific Railway.

   Tex. Univ., Min. Surv., Bull. no. 9, 119 pp., 11 pls., 4 figs., 1904.

   Describes the topography, the character, occurrence, and geologic relations of pre-Cambrian, Cambrian, Ordovician, Silurian, Carboniferous, Triassic, Jurassic, Cretaceous, and Quaternary deposits, the mineral resources, and underground water supply of the region.

5. Stratigraphic sequence in trans-Pecos Texas, north of the Texas and Pacific Railway.

   Abstract: Science, new ser., vol. 19, pp. 794–795, 1904.

6. Natural gas near Salt Lake City, Utah.

   U. S. Geol. Surv., Bull. no. 260, pp. 480–483, 1905.

   Describes the occurrence and character of natural gas near Salt Lake City, Utah.

7. Salt, gypsum, and petroleum in trans-Pecos Texas.

   U. S. Geol. Surv., Bull. no. 260, pp. 573–585, 1 fig., 1905.

   Describes briefly the topography and stratigraphy of the region, and the occurrence of salt, petroleum, and gypsum.

8. Native sulphur in El Paso County, Tex.

   U. S. Geol. Surv., Bull. no. 260, pp. 589–592, 1905.

   Describes the occurrence of sulphur.

Rickard (Edgar).

1. Tin deposits of the York region, Alaska.

   Eng. & Mg. Jour., vol. 75, pp. 30–31, 1903.

   Describes the geology of the region and the occurrence of tin.

Rickard (Forbes).

1. Notes on Nome, and the outlook for vein mining in that district [Alaska].

   Eng. and Mg. Jour., vol. 71, pp., 275–276, 1 fig., 1901.

   Contains notes on the geology of the region and the occurrence of gold.

2. Copper deposits in Sinaloa and southern Sonora [Mexico].

   Eng. & Mg. Jour., vol. 78, pp. 97–98, 4 figs., 1904.

   Describes the occurrence, geologic relations, and economic development of copper-ore deposits in this part of Mexico.

3. Notes on tungsten deposits in Arizona.

   Eng. & Mg. Jour., vol. 78, pp. 263–265, 2 figs., 1904.

   Describes the general geology of the Little Dragoon mountains in Arizona, and the geologic relations, occurrence, character, and mining of the deposits of tungsten ores.

Rickard (T. A.)

1. The Cripple Creek volcano [Colorado].

   Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 367–403, 2 figs., 1901.

   Gives an account of the various stages of eruption in this volcano and compares it with volcanos in other regions.

2. The telluride ores of Cripple Creek [Colorado] and Kalgoorlie [Australia].

   Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 708–718, 1901.

   Describes the characteristics of the ores of these regions.

3. The formation of bonanzas in the upper portions of gold-veins.

   Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 198–220, 1902.

   Discusses enrichment by concentration through the action of underground water by solution and precipitation, and the distribution of ore-bonanzas in Australia, Colorado, California, and New Zealand.

4. Recent progress in the study of ore deposits.

   Eng. & Mg. Jour., vol. 73, pp. 106–107, 1902.

5. The Geological Survey and the western mines.

   Eng. & Mg. Jour., vol. 74, p. 5, 1902.

6. An example of the localization of rich ore.

   Eng. & Mg. Jour., vol. 74, pp. 847–850, 6 figs., 1902.

Rickard (T. A.)—Continued.

7. Across the San Juan Mountains.

New York, The Engineering and Mining Journal, 115 pp., illus., 1903; appeared serially in the Eng. & Mg. Jour., vol. 76, pp. 7-10, 45-46, 82-84, 118-119, 154-155, 230, 269-270, 307-308, 346, 385-387, 423-424, 461-463, illus., 1903.

Contains observations on the geologic structure, ore deposits, and mining operations of southwestern Colorado.

8. The lodes of Cripple Creek [Colorado].

Eng. & Mg. Jour., vol. 75, pp. 179-181, 5 figs., 1903.

Discusses the occurrence of ore bodies.

9. Water in veins—a theory.

Eng. & Mg. Jour., vol. 75, pp. 402-403, 1903.

Discusses the distribution of water underground and its bearing upon the origin of ore deposits.

10. The syncline as a structural type.

Eng. & Mg. Jour., vol. 75, p. 746, 6 figs., 1903.

Discusses the syncline in relation to ore deposits.

11. The veins of Boulder and Kalgoorlie.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 567-577, 5 figs., 1903.

Describes the occurrence, character, and structure of gold-bearing veins of Boulder, Colorado and Kalgoorlie, West Australia.

12. The lodes of Cripple Creek [Colorado].

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 578-618, 23 figs., 1903.

Describes the general geology of the region, the occurrence and character of the lodes and veins, and the position of the ore bodies.

13. Genetic classification of ore deposits.

Abstract: Science, new ser., vol. 17, p. 542, 1903.

14. Copper mines of Lake Superior.

Eng. & Mg. Jour., vol. 78, pp. 585-587, 625-627, 665-667, 705-706, 745-747, 785-787, 825-827, 865-867, 905-907, 945-950, 985-987, illus., 1904.

Includes a description of the general geology of the region, the character and occurrence of the copper-ore deposits, and the mining operations.

15. The copper mines of Lake Superior.

New York, The Engineering & Mining Journal, 1905. 164 pp., illus.

Rickert (Julius).

1. Coal in Alberta, Canada.

Eng. & Mg. Jour., vol. 73, pp. 766-767, 1902.

Contains brief notes on the coals of Crow's Nest coal field.

Ries (Heinrich).

1. Clays and shales of Michigan, their properties and uses.

Mich. Geol. Surv., vol. 8, pt. 1, 66 pp., 4 pls., 6 figs., 1900.

Contains notes on the geologic occurrence and chemical composition of clays in Michigan.

2. Theodore Greely White.

Am. Geol., vol. 28, pp. 269-270, 1 pl. (por.), 1901.

Gives a brief sketch of his life and work, and a list of publications.

3. Clays of New York, their properties and uses.

N. Y. State Mus., 54th Ann. Rept., vol. 2, pp. 493-944, 140 pls., map in pocket, 1902.

4. Lime and cement industries of New York.

N. Y. State Mus., Bull. no. 44, pp. 639-848, 85 pls., map in pocket, 1901; N. Y. State Mus., 54th Ann. Rept., vol. 3, 1902.

Discusses origin, chemical composition and geologic occurrence in New York of lime and cement materials.

5. Report on the clays of Maryland.

Md. Geol. Surv., vol. 4, pp. 205-505, 51 pls., 30 figs., 1902.

Discusses origin, composition, properties, geologic and geographic distribution, and working of the clays of Maryland.

Ries (Heinrich)—Continued.

6. The clays of the United States east of the Mississippi River.

U. S. Geol. Surv., Professional Paper no. 11, 298 pp., 9 pls., 11 figs., 1903.

Discusses origin, geographic and geologic distribution of clays in the United States east of the Mississippi River, and their properties, composition, and utilization.

7. Uses of peat and its occurrence in New York.

N. Y. State Mus., 55th Ann. Rept., pp. r58-r90, 5 pls., 1903.

Describes origin and nature of peat, its utilization, and its occurrence in New York.

8. Magnetite deposits at Mineville, New York, and a description of the new electric concentrating plant.

Mines & Minerals, vol. 24, pp. 49-51, 5 figs., 1903.

Describes the character and occurrence of the iron ore deposits.

9. The coal mines at Las Esperanzas, Mexico.

Mich. Miner, vol. 5, no 2, pp. 13-15, 5 figs., 1903.

Describes the character, geologic occurrence, and mining of the Cretaceous coal beds.

10. Notes on mineral developments in the region around Ithaca [New York].

N. Y. State Mus., 56th Ann. Rept., pp. r107-r108, 1904.

Gives notes on the occurrence of economic materials and a geological section of a deep well.

11. Notes on recent mineral developments at Mineville [New York].

N. Y. State Mus., 56th Ann. Rept., pp. r125-r126, 1904.

Brief notes on the occurrence and production of iron ore at this locality.

12. Clay and its properties.

N. J. Geol. Surv., vol. 6, pp. 1-115, 15 pls., 34 figs., 1904.

iscusses mode of occurrence, methods of working, chemical and physical properties.

13. The manufacture of clay products, with special reference to the New Jersey industry.

N. J. Geol. Surv., vol. 6, pp. 211-533, 32 pls., 5 figs., 1904.

Includes notes on the occurrence and properties of clays.

14. The coal fields of Texas. Locations of the different deposits. Quality of the coals as shown by analyses. Production of the State.

Mines & Minerals, vol. 26, pp. 104-105, 2 figs., 1905.

15. Economic geology of the United States.

New York, The Macmillan Company, 1905. 435 pp., 25 pls., 97 figs.

Riggs (Elmer S.).

1. The Dinosaur beds of the Grand River valley of Colorado.

Field Col. Mus., Geol. ser., vol. 1, pp. 267-274, 6 pls., 1901.

Describes the general character of the Cretaceous, Jurassic, and Triassic strata, and the occurrence of vertebrate remains.

2. The fore leg and pectoral girdle of Morosaurus. With a note on the genus Camarosaurus.

Field Col. Mus., Geol. ser., vol. 1, pp. 275-281, 3 pls., 1901.

3 The largest known dinosaur.

Science, new ser., vol. 13, pp. 549-550, 1901.

Contains brief description of the skeleton obtained by a recent expedition of the Field Columbian Museum.

4. The vertebral column of Brontosaurus.

Science, new ser., vol. 17, pp. 393-391, 1903.

5. The use of pneumatic tools in the preparation of fossils.

Science, new ser., vol. 17, pp. 747-749, 1903.

6. Brachiosaurus altithorax, the largest known dinosaur.

Am. Jour. Sci., 4th ser., vol. 15, pp. 299-306, 7 figs., 1903.

Gives a description of this Jurassic fossil and discusses its relationships.

7. Structure and relationships of Opisthocœlian dinosaurs. Part I. Apatosaurus Marsh.

Field Col. Mus., Geol. ser., vol. 2, pp. 165-196, 8 pls., 18 figs., 1903.

Riggs (Elmer S.)—Continued.

8. Dinosaur footprints from Arizona.

Am. Jour. Sci., 4th ser., vol. 17, pp. 423-424, 1 fig., 1904.
Describes occurrence and character of footprints.

9. Structure and relationships of Opisthocœlian dinosaurs. Part II. The Brachiosauridæ.

Field Col. Mus., Geol. ser., vol. 2, pp. 229-247, 5 pls., 1 fig., 1904.

Riggs (Elmer S.) and **Farrington** (Oliver Cummings).

1. The Dinosaur beds of the Grand River Valley of Colorado.

Sci. Am. Suppl., vol. 53, pp. 22061-22062, 2 figs., 1902.

Ritter (Etienne A.).

1. Le district aurifère de Cripple Creek et ses récents développements dans la zone profonde.

Ann. des Mines, 10ᵉ sér., t. 7, pp. 465-487, 1905.
Describes the general geology, the lithology, the veins and their minerals, and the ore deposits of the Cripple Creek gold mining district.

Ritter (Wm. E.).

1. Some observations bearing on the probable subsidence during recent geologic times of the Island of Santa Catalina off the coast of southern California.

Science, new ser., vol. 14, pp. 575-577, 1901.

Rivers (J. J.).

1. Descriptions of some undescribed fossil shells of Pleistocene and Pliocene formations of the Santa Monica Range [California]

So. Cal. Acad. Sci., Bull., vol. 3, pp. 69-72, 1904.

Robbins (F.).

1. Ore occurrence at Leadville, Colo.

Mg. & Sci. Press, vol. 86, p. 168, 1903.
Describes the general stratigraphy of the region and the occurrence of the ore bodies.

Roberts (Milnor).

1. Note on the action of frost on soil.

Jour. Geol., vol. 11, pp. 314-317, 4 figs., 1903.

Roberts (Milnor), **Landes** (Henry), **Thyng** (William S.), **Lyon** (D. A.), and.

1. The metalliferous resources of Washington, except iron.

See **Landes** (H.), **Thyng** (W. S.), **Lyon** (D. A.), and **Roberts** (M.), 1.

Robertson (William Fleet).

1. Summary report on the valley of the Flathead River [British Columbia].

Brit. Col., Ann. Rept. Minister Mines for 1903, pp. 79-92, 1904.
Includes observations upon the physiography, geology, and economic resources of the region examined.

2. Report on the Trout Lake mining division [British Columbia].

Brit. Col., Ann. Rept., Minister Mines for 1903, pp. 109-124, 1904.
Includes observations upon the geology and economic resources of the region.

3. Report on the Lardeau mining district [British Columbia].

Brit. Col., Ann. Rept., Minister Mines for 1903, pp. 127-130, 1904.
Includes observations upon the geology of the region.

4. Petrography of rock samples from British Columbia.

Brit. Col., Ann. Rept., Minister Mines for 1903, pp. 254-263, 1904.
Gives reports upon examinations of rock specimens from British Columbia by A. E. Barlow, J. A. Dresser, and L. P. Silver.

Robinson (H. H.)

1. On octohedrite and brookite from Brindletown, North Carolina.

Am. Jour. Sci., 4th ser., vol. 12, pp. 180-184, 6 figs., 1901.
Describes occurrence and crystallographic characters of the minerals.

Robinson (Neil).

1. The Kanawha and New River coal fields of West Virginia, U. S. A.

   Charleston, W. Va., 23 pp. 3 pls., 1904. [Private publication].
   Includes notes upon the occurrence, geologic relations, composition, fuel values, and production of coal in the Kanawha and New River coal fields of West Virginia.

Rockstroh (Edwin).

1. Recent earthquakes in Guatemala.

   Nature, vol. 67, pp. 271–272, 1903.

Rockwell (Cleveland).

1. The Coos Bay coal fields [Oregon].

   Eng. & Mg. Jour., vol. 73, pp. 238–240, 270–271, 1902.
   Contains notes on the geologic structure of this area.

Rogers (Austin F.).

1. The Pottawatomie and Douglas formations along the Kansas River.

   Kan. Univ. Quart., vol. 9, pp. 234–254, 1900.
   Gives lists of fossils from various localities.

2. Mineralogical notes, no. 2.

   Am. Jour. Sci., 4th ser., vol. 12, pp. 42–48, 8 figs., 1901.
   Describes crystallographic characters of calcite, galena, pyrite, topaz, leadhillite, ilvaite, caledonite, barite, and celestite.

3. Some new American species of Cyclus from the Coal Measures.

   Kans. Univ., Sci. Bull., vol. 1, pp. 269–275, 1 pl., 1902; Columbia Univ., Geol. Dept., Contr., vol. 10, no. 88.

4. Mineralogical notes, no. 3.

   School of Mines Quart., vol. 23, pp. 133–139, 4 figs., 1902.
   Presents crystallographic notes on gypsum, celestite, barite, angelsite, cerussite, vesuvianite, calcite, dolomite, pyrite, and quartz crystals.

5. The crystallography of the calcites of the New Jersey trap region.

   School of Mines Quart., vol. 23, pp. 336–347, 1902.

6. The minerals of the Joplin, Mo., lead and zinc district.

   Abstract: N. Y. Acad. Sci., Ann., vol. 15, pp. 60–61, 1903.

7. A method for the exact expression of crystal habit.

   Sch. of Mines Quart., vol. 25, pp. 189–208, 22 figs., 1904.

Rogers (Austin F.), **Beede** (J. W.) and.

1. Coal Measure faunal studies, III. Lower Coal Measures.

   See Beede (J. W.) and Rogers (Austin F.), 1.

Rohn (Oscar).

1. The Baraboo iron range [Wisconsin].

   Eng. & Mg. Jour., vol. [illegible], pp. [illegible], 1903.
   Describes the general geology of the area and the occurrence and character of the iron ore.

Rolfe (Charles W.).

1. The geology of Illinois as related to its water supply.

   [illegible] maps, 1903.
   [illegible] geology and the geological history of Illinois.

Rollet de l'Isle et Giraud, Lacroix (A.).

1. Sur [illegible] de la Martinique.

   See Lacroix (A.), Rollet de l'Isle et Giraud, [illegible]

[illegible] [illegible]

1. [illegible]

   [illegible]
   [illegible]

[illegible] [illegible]

1. [illegible]

   [illegible] Eng. & Mg. [illegible]
   [illegible] deposits.

Rose (Robert Selden)—Continued.

2. The geology of some of the lands in the Upper Peninsula [Michigan].

   Lake Superior Mg. Inst., Proc., vol. 10, pp. 88–192 [1905].

   Describes the geologic occurrence, character, and location of iron ores in the Upper Peninsula.

Rowe (Jesse Perry).

1. Some volcanic ash beds of Montana.

   Mont. Univ., Bull. no. 17 (Geol. ser. no. 1), 32 pp., 9 pls., 1903.

   Discusses the origin of the volcanic ash of Montana; describes its composition and properties and distribution in the State by counties; gives a list and figures of fossil leaves from the ash of Missoula County.

2. Some Montana coal fields.

   Am. Geol., vol. 32, pp. 369–380, 2 pls., 1903.

   Describes the bituminous and lignite coal resources of Montana and the geographic distribution, by counties, of coal deposits.

3. Nodular barite and selenite crystals of Montana.

   Am. Geol., vol. 33, pp. 196–199, 1904.

   Describes occurrence and composition of selenite crystals and nodular barite in Montana.

4. Pseudomorphs and crystal cavities.

   Am. Jour. Sci., 4th ser., vol. 18, p. 80, 1 fig., 1904.

   Describes material from Shoshone, Idaho.

5. Montana gypsum deposits.

   Am. Geol., vol. 35, pp. 104–113, 4 pls., 1905.

   Describes the occurrence, character, and geological relations of gypsum deposits in Montana, and their utilization.

6. The Montana coal fields.

   Mg. Mag., vol. 11, pp. 241–250, 7 figs., 1905.

Rowley (R. R.).

1. Two new genera and some new species of fossils from the upper Paleozoic rocks of Missouri.

   Am. Geol., vol. 27, pp. 343–355, 1 pl., 1901.

   Describes species of two little-known groups of blastoids.

2. New species of fossils from the Subcarboniferous rocks of northeastern Missouri.

   Am. Geol., vol. 29, pp 303–310, 1902.

3. The Echinodermata of the Missouri Silurian and a new brachiopod.

   Am. Geol., vol. 34, pp 269–282, 1 pl., 1904.

4. Missouri paleontology.

   Am. Geol., vol. 35, pp. 301–311, 1 pl., 1905.

   Describes various species of fossils, in part new, mainly Echinodermata, from Mississippian formations of Missouri.

   See also **Greene** (G. K.).

Ruddy (C. A.).

1. The water resources of Washington. Artesian water.

   Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 296–307, 1902.

Ruddy (C. A.), **Landes** (Henry) and.

1. Coal deposits of Washington.

   See **Landes** (Henry) and **Ruddy** (C. A.), 1.

Ruedemann (Rudolf).

1. Hudson River beds near Albany and their taxonomic equivalents.

   N. Y. State Mus., Bull. no. 42, pp. 489–587, 2 pls., 5 figs., 1901. Abstract: Am. Geol., vol. 27, pp. 377–378, 1901.

   Reviews previous work on these strata. Describes the lithologic and faunal characters at various localities in the region and discusses the geologic structure and correlation of the beds. Describes the characters of new species of fossils collected.

2. Trenton conglomerate of Rysedorph Hill, Rensselaer County, N. Y., and its fauna.

   N. Y. State Mus., Bull. 49, pp. 3–114, 9 pls., 1901.

   Describes the stratigraphic relations and characters of the fauna.

Ruedemann (Rudolf)—Continued.

3. The graptolite (Levis) facies of the Beekmantown formation in Rensselaer County, New York.

N. Y. State Mus., Bull. no. 52, pp. 546-575, 1 pl., 1902.

Describes the lithologic and faunal characters of the beds, and discusses their relations and correlation with Canadian and European strata of the same age.

4. Growth and development of Goniograptus thureaui McCoy.

N. Y. State Mus., Bull. no. 52, pp. 576-592, 19 figs., 1902.

Discusses the ontogony of the species.

5. Noetling on the morphology of the pelecypods.

Am. Geol., vol. 31, pp. 34-40, 1 pl., 1903.

Gives a summary of Noetling's views on the "law of torsion" in pelecypod shells and the relations of the animal and the position of its shell.

6. Professor Jaekel's theses on the mode of existence of Orthoceras and other cephalopods.

Am. Geol., vol. 31, pp. 199-217, 1903.

Gives a translation of Professor Jaekel's theses and some of the discussion following (Zeitschrift der Deutschen geologischen Gesellschaft, 54 Bd., 2 Heft, Protokolle, pp. 67-101, 1902), and discusses these propositions. Includes "Annotations" by John M. Clarke.

7. The Cambric Dictyonema fauna in the slate belt of eastern New York.

N. Y. State Mus., Bull. 69, pp. 934-958, 4 pls., 1903.

Describes occurrence, character, geologic position, and paleontology of Upper Cambrian strata in Rensselaer County, New York, and discusses the relations of the Dictyonema beds of Scandinavia, Great Britain, and North America, and the bearing of the latter upon paleogeography.

8. Graptolites of New York. Part 1. Graptolites of the lower beds.

N. Y. State Mus., Mem. 7, pp. 455-803, 17 pls. and 105 figs., 1904.

Gives a review of investigations upon the graptolites, discusses their structure, morphology, classification, phyllogeny, range, and distribution, and gives systematic descriptions of the graptolites from the upper Cambrian and lower Ordovician of New York.

9. The structure of some primitive cephalopods.

N. Y. State Mus., Bull. no. 80, pp. 296-341, 26 figs., 1905.

Ruedemann (Rudolf), **Clarke** (John M.) and.

1. Guelph fauna in the State of New York.

See **Clarke** (J. M.) and **Ruedemann** (Rudolf), 1.

Ruedemann (Rudolf), **Clarke** (J. M.), and **Luther** (D. D.).

1. Contact lines of Upper Siluric formations on the Brockport and Medina quadrangles [New York].

See **Clarke** (J. M.), **Ruedemann** (R.), and **Luther** (D. D.), 1.

Ruhl (Otto).

1. The King-Ritter fault.

Drury Coll., Bradley Field Geol. Station, Bull., vol. 1, pp. 33-36, 1904.

Describes occurrence and character of faulting along the northern slope of the Ozark uplift in southwestern Missouri.

2. Observations at Pegmatite Hill (Camden County, Missouri].

Drury Coll., Bradley Field Geol. Station, Bull., vol. 1, pp. 36-40, 1904.

Describes the geologic structure at this locality.

Ruhm (H. D.).

1. The present and the future of the Mount Pleasant phosphate field.

Eng. Assoc. South., Trans., 1902, vol. 13, pp. 42-64 [1903].

Describes discovery, occurrence, and production of phosphate rock in the Mount Pleasant phosphate field of Tennessee.

Russell (Israel C.).

1. Geology and water resources of Nez Perce County, Idaho. Part I.

U. S. Geol. Surv., Water-Supply and Irrigation Papers, no. 53, pp. 1-85, 10 pls., 4 figs., 1901. Abstract: Am. Geol., vol. 28, pp. 319-321, 1901.

Describes the pre-Tertiary terranes, the Columbia lava, the soils, and the physiography.

Russell (Israel C.)—Continued.

2. Geology and water resources of Nez Perce County, Idaho. Part II.

U. S. Geol. Surv., Water-Supply and Irrigation Papers, no. 54, pp. 95–141, 10 figs., 1901.

Describes the character and occurrence of the water supply, building stones, and lignite. Includes a bibliography of artesian waters and a note concerning Portland cement.

3. [Report to the National Geographic Society on the recent volcanic eruptions in the West Indies.]

Nat. Geog. Mag., vol. 13, pp. 267–285, 8 figs, 1902.

Describes the author's observations in Martinique and St. Vincent.

4. Volcanic eruptions on Martinique and St. Vincent.

Nat. Geog. Mag., vol. 13, pp. 415–436, 10 figs., 1902.

Contains additional data on the eruptions and a bibliography.

5. Geology and water resources of the Snake River Plains of Idaho.

U. S. Geol. Surv., Bull. no. 199, 192 pp., 25 pls., 6 figs., 1902.

Describes topography, geology and resources of this area.

6. The Portland-cement industry in Michigan.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 629–685, 3 pls., 1902.

Describes composition of Portland cement, method of manufacture, the geologic occurrence, properties and composition of limestones, shales, marls and clays occurring in Michigan suitable for the manufacture of Portland cement, and the development of the industry.

7. Geology of the Snake River Plains, Idaho.

Abstract: Science, new ser., vol. 15, pp. 85–86, 1902.

8. Notes on the geology of southwestern Idaho and southeastern Oregon.

U. S. Geol. Surv., Bull. no. 217, 83 pp., 18 pls., 2 figs., 1903.

Describes climatic conditions, topography, hydrography, recent and Tertiary volcanic formations, and the geologic structure of this region, and discusses conditions of origin and accumulation of petroleum.

9. Preliminary report on artesian basins in southwestern Idaho and southeastern Oregon.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 78, 51 pp., 2 pls., 3 figs., 1903.

Includes a short account of the general geology of the region.

10. Volcanic eruptions on Martinique and St. Vincent.

Smith. Inst., Ann. Rept. for 1902, pp. 331–349, 11 pls., 1903.

Reprinted by permission, after revision by the author, from the National Geographic Magazine, vol. 13, no. 12, December, 1902. See no. 4 above.

11. Glacier cornices.

Jour. Geol., vol. 11, pp. 783–785, 1 fig., 1903.

Describes glacier cornices and discusses their origin.

12. The Pelé obelisk.

Science, new ser., vol. 18, pp. 792–795, 1903.

13. Criteria relating to massive-solid volcanic eruptions.

Am. Jour. Sci., 4th ser., vol. 17, pp. 253–268, 3 figs., 1904.

Describes massive-solid volcanic eruptions, and discusses the character of the evidence necessary to determine that volcanic masses have been extruded in a solid state.

14. Physiographic problems of to-day.

Jour. Geol., vol. 12, pp. 524–550, 1904.

Discusses the scope, nomenclature, and field of investigation of physiography, the use of ideal physiographic types, the primary and secondary features of the earth's surface, and the relations of physiography to life and man.

15. North America (Appleton's World Series: The regions of the world).

New York, D. Appleton and Company, 1904. 435 pp., 8 pls., 39 figs.

Includes chapters on the margin of the continent, the topography of the land, climate, plant life, animal life, geology, the aborigines, and political geography. In the chapter on geology describes the growth of the continent, the distribution and character of the rocks of which it is composed, and the occurrence of economic products.

16. Douglass Houghton.

Mich. Acad. Sci., 4th Rept., pp. 160–162, por., 1904.

Gives a brief account of his life.

Russell (Israel C.)—Continued.

17. Bela Hubbard.

Mich. Acad. Sci., 4th Rept., pp. 163-165, por., 1904.
Gives a brief account of his life.

18. Biographical notice of William Henry Pettee.

Am. Geol., vol. 35. pp. 1-4, 1 pl. (por.). 1905.
Includes a list of his published writings.

19. The influence of caverns on topography.

Science, new ser., vol. 21, pp. 30-32, 1905.

20. Hanging valleys.

Geol. Soc. Am., Bull., vol. 16, pp. 75-90, 1905.
Gives a classification of hanging valleys, describes their characters and origin, and discusses particularly the characteristics and origin of glaciated hanging valleys.

21. Preliminary report on the geology and water resources of central Oregon.

U. S. Geol. Surv., Bull. no. 252, 138 pp., 24 pls., 1905.
Describes the general physiographic features and geology of the region, and in detail the physiographic features, the character and occurrence of volcanic and stratified rocks and the water resources of the counties included in the area under consideration.

22. The Pelé obelisk once more.

Science, new ser., vol. 21, pp. 924-931, 1 fig., 1905.
Discusses the mode of formation of the spine of Mont Pelé.

23. A geological reconnaissance along the north shore of Lakes Huron and Michigan.

Mich. Geol. Surv., Rept. for 1904, pp. 33-112, 3 pls., 1 map, 1905.
Describes briefly the character and occurrence of Ordovician, Silurian, and Devonian strata, and in detail the extent, character, and origin of Glacial deposits, and various physiographic features.

24. Drumlin areas in northern Michigan.

Abstract: Am. Geol., vol. 35, pp. 177-179, 1905; Science, new ser., vol. 21, pp. 220-221, 1905.

Rutland (Joshua).

1. Mammals and reptiles; or what was the Ice ages?

Sci. Am. Suppl., vol. 51, pp. 21032-21033, 1901.
Describes their occurrence and characters in geologic times.

Rutledge (J. J.), **Clark** (W. B.), **Martin** (G. C.) and.

1. Distribution and character of the Maryland coal beds.

See **Clark** (W. B.), **Martin** (G. C.), and **Rutledge** (J. J.), 1.

Rutley (Frank).

1. Mineralogy.

London, Thomas Murby, 1900. 12th ed., 240 pp. Review: Am. Jour. Sci., 4th ser., vol. 11 p. 921, 1901.

S.

Safford (J. M.).

1. Horizons of phosphate rocks in Tennessee.

Geol. Soc. Am., Bull., vol. 13, pp. 14-15, 1901.
Describes the geologic relations of the various phosphate deposits

2. Classification of the geological formations of Tennessee.

Geol. Soc. Am., Bull., vol. 13, pp. 10-14, 1901.
Gives in tabular form a list of the geological formations of Tennessee and includes brief notes regarding them.

Safford (J. M.), and **Killebrew** (J. B.).

1. The elements of the geology of Tennessee.

Nashville, Tenn., 1900. 264 pp., 45 figs.

Salazar (Leopoldo).

1. Apuntes relativos al mineral de Taxco de Alarcon (Estado de Guerrero) [México].

Soc. Cient. Ant. Alz., Mem., vol. 16, pp. 167-177, 1 pl., 1901.

Salisbury (Rollin D.).

1. The surface formations in southern New Jersey.

N. J. Geol. Surv., Ann. Rept. for 1900, pp. 33-40, 1901.

Describes the character and occurrence of the surface formations of pre-Pleistocene and Pleistocene ages in southern New Jersey.

2. Glacial work in the western mountains in 1901.

Jour. Geol., vol. 9, pp. 718-731, 1901.

Describes the results of the work of several parties of students in various parts of western United States.

3. [In discussion of paper by T. C. Chamberlin on "The geologic relations of the human relics of Lansing, Kansas."]

Jour. Geol., vol. 10, pp. 778-779, 1902.

4. Recent progress in glaciology.

Science, new ser., vol. 15, pp. 353-355, 1902.

5. Three new physiographic terms.

Jour. Geol., vol. 12, pp. 707-715, 5 figs., 1904.

Defines, discusses, and illustrates the application of the physiographic terms topographic unconformity, topographic and structural adjustment, and superimposed youth.

6. The mineral matter of the sea, with some speculations as to the changes which have been involved in its production.

Jour. Geol., vol. 13, pp. 469-484 1905

Discusses the amounts of various kinds of mineral matter in the sea, and the bearing of these facts upon geologic history and geologic time.

Salisbury (Rollin D.) and others.

1. New York City folio, New York-New Jersey.

See **Merrill** (F. J. H.) and others, 1.

Salisbury (Rollin D.) and **Blackwelder** (Eliot).

1. Glaciation in the Bighorn Mountains.

Jour. Geol., vol. 11, pp. 216-223, 2 figs., 1903

Describes distribution of glaciers in the region, and character, occurrence, and age of the glacial deposits.

Salisbury (Rollin D.), assisted by **Kümmel** (Henry B.), **Peet** (Charles E.), and **Knapp** (George N.).

1. The glacial geology of New Jersey.

N. J. Geol. Surv., Final Rept., vol. 5, xxv+ 802 pp., 66 pls., 102 figs. in text, 4 maps (in pocket), 1902.

Discusses character, distribution, and origin of the drift, the development of the ice sheet, the topographic and drainage changes produced by it, the history and cause of the Glacial period, and describes in detail the drift features of northern New Jersey

Salisbury (Rollin D.), **Chamberlin** (Thomas C.), and.

1. Geology. In two volumes. Vol. 1. Geologic processes and their results.

See **Chamberlin** (Thomas C.) and **Salisbury** (Rollin D.), 1.

Sapper (Carl).

1. Bemerkungen über einige Vulkane von Guatemala und Salvador.

Petermanns Mitteilungen, Bd. 46, pp. 149-161, 1 pl., 1900.

2. Die südlichsten Vulkane Mittel-Amerikas.

Zeitschr. d. Deutsch. geol. Gesellsch., Bd. 53, pp. 24-51, 5 figs., 1901.

Describes volcanoes in the southern part of Central America.

3. Die Alta Verapaz (Guatemala).

Mitth. d. Geog. Ges. in Hamburg, Band 17, pp. 78-214, 5 pls. (maps), 1901.

Describes the general geology, the character and occurrence of pre-Paleozoic, Paleozoic, Mesozoic, Tertiary, and Cenozoic formations, the geologic history, and the petrology of this region.

4. Das Erdbeben in Guatemala vom 18. April, 1902.

Petermanns Mitteilungen, Band 48, pp. 193-195, 1 pl. (map), 1902.

Describes the earthquake of April 18, 1902, in Guatemala.

Sapper (Carl)—Continued.

5. Der Ausbruch des Vulkans Santa Maria in Guatemala (Oktober, 1902).

Centralbl. f. Min., pp. 33–44, 1 fig., pp. 65–70, 3 figs., 1903.
Describes phenomena connected with the volcanic eruption of Santa Maria in Guatemala in October, 1902.

6. Weitere Mittheilungen über den Ausbruch des Vulkans St. Maria in Guatemala.

Centralbl. f. Min., pp. 71–72, 1903.
Gives further observations upon the eruption of the volcano St. Maria in Guatemala.

7. Die jüngsten Ereignisse am Vulkan Izalco (Salvador).

Centralbl. f. Min., pp. 103–111, 1 fig., 1903.
Describes volcanic phenomena in Salvador.

8. Ein Besuch der Insel Grenada.

Centralbl. f. Min., pp. 182–186, 1903.
Gives observations upon volcanic deposits of this island.

9. Bericht über einen Besuch von St. Vincent.

Centralbl. f. Min., pp. 248–258, 5 figs., 1903.
Gives observations upon the geology and volcanic phenomena of St. Vincent.

10. Zur Kenntniss der Insel S. Lucia in Westindien.

Centralbl. f. Min., pp. 273–278, 2 figs., 1903.
Gives observations upon the geology and sulphur springs of the island.

11. Ein Besuch der Insel Montserrat (Westindien).

Centralbl. f. Min., pp. 279–283, 1 fig., 1903.
Gives observations upon the geology of the island.

12. Ein Besuch von Dominica.

Centralbl. f. Min., pp. 305–314, 3 figs., 1903.
Gives observations upon geologic features of the island.

13. Ein Besuch von S. Eustatius und Saba.-

Centralbl. f. Min., pp. 314–318, 3 figs., 1903.
Gives observations upon the geology of these islands.

14. Ein Besuch von Guadeloupe.

Centralbl. f. Min., pp. 319–323, 2 figs., 1903.
Gives observations upon the geology and fumaroles of the island.

15. Ein Besuch von Martinique.

Centralbl. f. Min., pp. 337-358, 7 figs., 1903.
Describes observations upon the geology of the island and the phenomena connected with the eruptions of Mont Pelé.

16. Der Krater der Soufrière von St. Vincent.

Centralbl. f. Min., pp. 369–373, 2 figs., 1903.
Describes the crater of the Soufrière of St. Vincent.

17. Ein Besuch der Inseln Nevis und S. Kitts (S. Christopher) [West Indies].

Centralbl. f. Min., pp. 384–387, 2 figs., 1903.
Gives observations upon the geologic formations of the island.

18. St. Vincent.

Globus, Bd. 84, pp. 297-303, 377–383, 1903.
Describes the eruption and its effects of the Soufrière on St. Vincent.

19. Die vulcanischen Kleinen Antillen und die Ausbrüche der Jahre 1902 und 1903.

Neues Jahrb. f. Min., etc., Bd. 2, pp. 1–70, 13 pls., 9 figs., 1904.
Discusses volcanic and related phenomena of the Lesser Antilles that took place in 1902 and 1903, the character and occurrence of the volcanic rocks ejected, and the forms of the Antillean volcanoes.

20. Die vulcanischen Ereignisse in Mittelamerika in Jahre 1902.

Neues Jahrb. f. Min., etc., Bd. 1, pp. 39–90, 7 pls., 8 figs., 1904.
Describes volcanic eruptions of 1902 in Central America.

21. Neuere vulkanische Ereignisse in Mittelamerika.

Centralbl. f. Min., pp. 449–450, 1904.
Notes the activity of some volcanos in several States of Central America.

Sapper (Carl)—Continued.

22. Grundzüge des Gebirgsbaus von Mittelamerika.

Intern. Geog. Cong., Eighth, Rept., pp. 231-238, 1 map, 1905.
Describes briefly the general geologic structure of Central America.

23. Ein neuer Vulkanausbruch in Mittelamerika.

Centralbl. f. Min., Geol. u. Pal., no. 6, pp. 172-175, 1905.
Describes an eruption of the volcano Momotombo in Nicaragua that took place in January 1905.

24. In den Vulcangebieten Mittelamerikas und Westindiens: Reiseschilderungen und studien über die Vulcanausbrüche der Jahre 1902 bis 1903, ihre geologischen, wirthschaftlichen und socialen Folgen.

Stuttgart; Verlag der E. Schweizerbartschen Verlagsbuchhandlung (E. Nägele), 1905. vi, 334 pp., 33 pls. and 48 figs.
Describes volcanic eruptions of 1902-3, and physiographic and geologic features of the Lesser Antilles.

Sardeson (Frederick W.).

1. The Saint Peter sandstone.

Minn. Acad. Nat. Sci., Bull., vol. 4, no. 1, pp. 64-88, 3 pls., 1896.
Discusses geographic distribution and lithologic characters, and describes the fauna.

2. The fauna of the Magnesian series.

Minn. Acad. Nat. Sci., Bull., vol. 4, no. 1, pp. 92-105, 2 pls., 1896.

3. Problem of the Monticuliporoidea. I.

Jour. Geol., vol. 9, pp. 1-27, 1 pl. and 1 fig., 1901.
Describes the characters of various species of Trepostomata and discusses their affinities.

4. Problem of the Monticuliporoidea. II.

Jour. Geol., vol. 9, pp. 149-173, 1 pl., 1 fig., 1901.
Describes the general characters of various species of Cryptostomata and discusses their affinities.

5. Note on the western Tertiary.

Science, new ser., vol. 13, pp. 868-869, 1901.
Contains notes on the occurrence of fossils as indicating the mode of formation of the strata.

6. Paleozoic fossils in the drift [Minnesota].

Minn. Acad. Nat. Sci., Bull., vol. 3, pp. 317-318, 1901.

7. Fossils in the St. Peter sandstone.

Minn. Acad. Nat. Sci., Bull., vol. 3, pp. 318-319, 1901.

8. The lower Silurian formations of Wisconsin and Minnesota compared.

Minn. Acad. Nat. Sci., Bull., vol. 3, pp. 319-326, 1 fig., 1901.

9. The range and distribution of the lower Silurian fauna of Minnesota, with descriptions of some new species.

Minn. Acad. Nat. Sci., Bull., vol. 3, pp. 326-343, 1901.

10. On the deceptive fossilization of certain pelecypod species and on the genus Eurymya.

Am. Geol., vol. 30, pp. 39-45, 9 figs., 1902.
Describes the preservation of Modiolopsis plana Hall.

11. The Carboniferous formations of Humboldt, Iowa.

Am. Geol., vol. 30, pp. 300-312, 1 pl., 1902.
Describes the occurrence of the Kinderhook at this locality and the characters of the fossils collected.

12. Observations on the genus Romingeria, by Charles E. Beecher.

Am. Geol., vol. 32, pp. 260-261, 1903.

13. The phylogenic stage of the Cambrian Gastropoda

Jour. Geol., vol. 11, pp. 469-492, 2 pls., 1903.

14. A particular case of glacial erosion.

Jour. Geol., vol. 13, pp. 351-357, 2 figs., 1905.

Sarle (Clifton J.).

1. Reef structures in Clinton and Niagara strata of western New York.

Am. Geol., vol. 28, pp. 282-299, 5. pls., 1901.

Describes occurrence of irregular, hardened masses in the limestone and discusses their origin. Describes similar occurrences in other geologic horizons.

2. A new eurypterid fauna from the base of the Salina of western New York.

N. Y. State Mus., Bull. 69, pp. 1080-1108, 21 pls., 1903.

3. Economic geology of Monroe County and contiguous territory [New York].

N. Y. State Mus., 56th Ann. Rept., pp. r75-r106, 1 pl., 1904.

Describes the general geology of the county, and the occurrence and utilization of stone, clays, sand, gravel, gypsum, and peat.

4. The burrow origin of Arthrophycus and Dædalus (Vexillum).

Abstract: Science, new ser., vol. 22, p. 335, 1905.

Savage (T. E.).

1. Drift exposure in Tama County [Iowa].

Iowa Acad. Sci., Proc., vol. 8, pp. 275-278, 1 fig., 1901.

Describes the strata exposed in a railroad cutting and refers them to the Kansas drift, Aftonean inter-Glacial period, and pre-Kansan drift.

2. Geology of Henry County [Iowa].

Iowa Geol. Surv., vol. 12, Ann. Rept. for 1901, pp. 239-302, 12 figs. and geol. map, 1902.

Describes the physiographic and drainage features, geologic structure, and economic products of this county.

3. Geology of Tama County [Iowa].

Iowa Geol. Surv., vol. 13, pp. 185-253, 13 figs., 1903.

Describes topography and drainage, the character, occurrence, and geologic relations of Devonian and Carboniferous strata and Glacial and post-Glacial deposits, and the economic resources.

4. The Toledo lobe of Iowan drift.

Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 123-129, 1903.

Describes the geographic position, physiographic features, and component materials of this portion of the drift sheet, and the distribution of drift deposits in the lobe, and the sequence of geologic events producing them.

5. A buried peat bed in Dodge Township, Union County, Iowa.

Iowa Acad. Sci., Proc. for 1903, vol. 11, pp. 103-109, 1 pl., 1904.

Describes occurrence and geologic relations of a peat bed in glacial deposits, and discusses its origin.

6. Report of the assistant State geologist [Iowa].

Iowa Geol. Surv., vol. 15, Ann. Rept., 1904, pp. 12-14, 1905.

Outlines the official work carried on by the author.

7. Geology of Benton County [Iowa].

Iowa Geol. Surv., vol. 15, Ann. Rept., 1904, pp. 125-225, 15 figs., 1 map, 1905.

Describes the physiographic features, the occurrence, character, and relations of Devonian and Mississippian strata and Pleistocene deposits, and the economic products.

8. Geology of Fayette County [Iowa].

Iowa Geol. Surv., vol. 15, Ann. Rept., 1904, pp. 433-546, 17 figs., 2 maps, 1905.

Describes the physiography, the occurrence, character, and relations of Ordovician, Silurian, and Devonian strata and Pleistocene deposits, and the economic resources.

Savicki (Wm. V.).

1. Geological Survey of Michigan. Report of field work for 1900.

Mich. Miner, vol. 3, no. 3, pp. 9-11, 1 fig., 1901.

Scalia (S.), **Burckhardt** (C.) and.

1. La faune marine du Trias Supérieur de Zacatecas [Mexique].

See **Burckhardt** (C.) and **Scalia** (S.), 1.

Schaller (Waldemar T.).

1. Minerals from Leona Heights, Alameda Co., California.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 191-217, 1 pl., 1903.

Schaller (Waldemar T.)—Continued.

2. Spodumene from San Diego Co., California.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 265-275, 3 pls., 1903.
Describes occurrence, crystallization, physical properties, and composition.

3. Notes on some California minerals.

Am. Jour. Sci., 4th ser., vol. 17, pp. 191-194, 1904.
Describes the character, occurrence, and composition of halloysite, amblygonite, boothite, pisanite, and a quartz pseudomorph.

4. The tourmaline localities of southern California.

Science, new ser., vol. 19, pp. 266-268, 1904.
Describes the occurrence and character of tourmaline deposits.

5. Dumortierite.

Am. Jour. Sci., 4th ser., vol. 19, pp. 211-224, 3 figs., 1905.
Describes the general and crystallographic characters, and composition of this mineral.

6. Crystallography of lepidolite.

Am. Jour. Sci., 4th ser., vol. 19, pp. 225-226, 1905.

7. Dumortierite.

U. S. Geol. Surv., Bull. no. 262, pp. 91-120, 3 figs., 1905.

8. Mineralogical notes.

U. S. Geol. Surv., Bull. no. 262, pp. 121-144, 4 figs., 1905.
Describes the occurrence, composition, and optical and other properties of various minerals.

Schaller (W. T.) and **Hillebrand** (W. F.).

1. Crystallographical and chemical notes on lawsonite.

Am. Jour. Sci., 4th ser., vol. 17, pp. 195-197, 1904.

2. Notes on lawsonite.

U. S. Geol. Surv., Bull. no. 262, pp. 58-60, 1 fig., 1905.
Describes the optical characters and chemical composition.

Schaller (W. T.), **Graton** (L. C.) and.

1. Purpurite, a new mineral.

See **Graton** (L. C.) and **Schaller** (W. T.), 1.

Scherer (George H.).

1. Geology of the Hahatonka district, Camden County [Missouri].

Drury Coll., Bradley Geol. Field Station, Bull., vol. 1, pp. 58-67, 1 pl., 1905.
Gives an account of the occurrence and geologic formations of the region and of the springs.

Schiotz (O. E.).

1. Results of the pendulum observations and some remarks on the constitution of the earth's crust.

Nansen's Norwegian North Polar expedition. Scientific results, vol. 2, viii, pp. 1-90, 1901.

Schmeckebier (Laurence F.).

1. Catalogue and index of the publications of the Hayden, King, Powell, and Wheeler surveys, namely: Geological and Geographical Survey of the Territories, Geological Exploration of the Fortieth Parallel, Geographical and Geological Surveys of the Rocky Mountain region, Geographical and Geological Surveys west of the One Hundredth Meridian.

U. S. Geol. Surv., Bull. no. 222, 208 pp., 1904.

Schmidt (C.).

1. Ueber vulkanische Asche, gefallen in San Cristobal L. C. (Süd-Mexiko) am 25 Oktober 1902.

Centralbl. f. Min., p. 131, 1903.
Discusses the composition of volcanic ashes.

Schmitt (Joseph).

1. Monographie de l'Ile d'Anticosti (golfe Saint-Laurent).

Paris, A. Hermann, 1904. vi, 367 pp., 12 figs. and map.

Schneider (Philip F.).

1. Notes on the geology of Onondaga County, N. Y.

   Syracuse, N. Y., 47 pp., 1894. (Privately printed.)

   Describes the character, occurrence, and geologic relations of the formations of Silurian and Devonian age in this county, and gives observations upon the occurrence of fossils.

2. Limestones in central New York.

   Onondaga Acad. Sci., Science ser., no. 1, 16 pp., 1897.

   Describes the occurrence, character, and utilization of the limestones in central New York.

3. The Marcellus fault.

   Onondaga Acad. Sci., Science ser., no. 2, 7 pp., 1899.

   Describes faulting in the vicinity of Marcellus, N. Y.

4. New exposures of eruptive dikes in Syracuse, New York.

   Am. Jour. Sci., 4th ser., vol. 14, pp. 24–26, 1902.

   Describes the occurrence and character of the dike rock.

5. The whetstone industry.

   Onondaga Acad. Sci., Proc., vol. 1, pp. 20–31, 1903.

   Describes the occurrence and character of the Labrador whetstone in the Portage group in the vicinity of Syracuse, N. Y.

6. The geology of the serpentines of central New York.

   Onondaga Acad. Sci., Proc., vol. 1, pp. 110–117, 1903.

   Describes the occurrence and petrologic characters of dikes at Syracuse, N. Y.

7. Notes on some eruptive dikes near Ithaca [New York].

   Onondaga Acad. Sci., Proc., vol. 1, pp. 130–136, 1903.

8. South Onondaga geology.

   In "The Septuagenary of the South Onondaga Methodist Episcopal Society" by W. W. Newman (Syracuse, N. Y., C. W. Bardeen, 1904, 108 pp.), pp. 80–84, 1904.

   Gives a sketch of the geological history of the region around South Onondaga, New York.

9. Preliminary note on some overthrust faults in central New York.

   Am. Jour. Sci., 4th ser., vol. 20, pp. 308–312, 1905.

10. The correlation of some alnoite dikes in East Canada Creek [New York].

    Abstract: Science, new ser., vol. 22, p. 673, 1905.

Scholz (Carl).

1. [Discussion of paper by Charles Catlett on "Coal outcrops."]

   Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 1107–1109, 1901.

2. The coal fields of Arkansas and Indian Territory.

   Mg. Mag., vol. 11, pp. 520–524, 2 figs., 1905.

Schottler (W.).

1. Bemerkung über die in San Cristobal (S.-Mexico) am 25 Okt. 1902 gefallene Asche.

   Centralbl. f. Min., pp. 286–289, 1903.

   Describes petrographic characters of volcanic ashes from San Cristobal, in southern Mexico.

Schrader (Frank Charles).

1. Geological section of the Rocky Mountains in northern Alaska.

   Geol. Soc. Am., Bull., vol. 13, pp. 233–252, 4 pls., 1902.

   Describes the character and occurrence of the Silurian, Devonian, Carboniferous and Mesozoic rocks.

2. The geological section of the Rocky Mountains in northern Alaska.

   Abstract: Science, new ser., vol. 15, pp. 665–666, 1902.

3. Reconnaissance in northern Alaska across the Rocky Mountains, along Koyukuk, John, Anaktuvuk, and Colville rivers, and the Arctic coast to Cape Lisburne, in 1901.

   U. S. Geol. Surv., Professional Paper no. 20, 139 pp., 16 pls., 4 figs., 1904.

   Reviews previous exploration of the region, describes the geography, character, and occurrence of Silurian, Devonian, Cretaceous, Tertiary, and Quaternary strata, and the mineral resources, principally gold and coal.

Schrader (F. C.) and **Brooks** (Alfred H.).

1. Some notes on the Nome gold region of Alaska.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 236-247, 3 figs., 1901.

Describes the topography of the region, the occurrence of the placers, and the origin of the beach placers.

Schrader (Frank C.) and **Haworth** (Erasmus).

1. Oil and gas of the Independence quadrangle, Kansas.

U. S. Geol. Surv., Bull. no. 260, pp. 446-458, 1905.

Gives a summary report on the distribution, occurrence, development, production, character, and utilization of the oil and gas of the Independence quadrangle in southeastern Kansas.

2. Clay industries of the Independence quadrangle, Kansas.

U. S. Geol. Surv., Bull. no. 260, pp. 546-549, 1905.

Describes occurrence and character of clays, and their manufacture into brick and other wares.

Schrader (Frank Charles) and **Spencer** (Arthur Coe).

1. The geology and mineral resources of a portion of the Copper River district, Alaska.

U. S. Geol. Surv. (Special reports on Alaska.) 94 pp., 13 pls., 1901.

Describes the general geography and physiography, the occurrence and character of the sedimentary and igneous rocks, and the occurrence of copper and gold.

Schrader (F. C.), **Haworth** (E.) and.

1. Portland-cement resources of the Independence quadrangle, Kansas.

See **Haworth** (E.) and **Schrader** (F. C.), 1.

Schrader (F. C.), **Mendenhall** (Walter C.) and.

1. The mineral resources of the Mount Wrangell district, Alaska.

See **Mendenhall** (W. C.) and **Schrader** (F. C.), 1.

2. Copper deposits of the Mount Wrangell region, Alaska.

See **Mendenhall** (W. C.) and **Schrader** (F. C.), 2.

Schramm (Eck Frank).

1. A preliminary report on the building stone of Oklahoma.

Okla., Dept. Geol. & Nat. Hist., 3d Bien. Rept., pp. 37-49, 1904.

Schuchert (Charles).

1. On the Helderbergian fossils near Montreal, Canada.

Am. Geol., vol. 27, pp. 245-253, 4 figs., 1901.

Contains notes on the fossils and probable correlations of the St. Helens Island faunas of New York. Figures two new species.

2. Morse on living brachiopods.

Am. Geol., vol. 31, pp. 112-121, 1903.

Reviews "Observations on living brachiopods," by Edward S. Morse, especially such parts as have a direct bearing on fossil forms. Includes observations on paleozoic forms.

3. The I. H. Harris collection of invertebrate fossils in the United States National Museum.

Am. Geol., vol. 31, pp. 131-135, 1 pl. (por.), 1903.

Gives a sketch of the life of Mr. I. H. Harris and an account of the collection which he accummulated.

4. On the Manlius formation of New York.

Am. Geol., vol. 31, pp. 160-178, 3 figs., 1903.

Discusses stratigraphic position of the Coralline limestone of the New York series and gives notes upon its fauna, with descriptions of some species.

5. On the faunal provinces of the middle Devonic of America and the Devonic coral sub-provinces of Russia, with two paleographic maps.

Am. Geol., vol. 32, pp. 137-162, 2 pls., 1903.

Gives a summary of Lebedew's work on the corals of Russia, describes the faunal provinces of the American middle Devonic and relations of their faunas with one another and with the faunas of European provinces, and tabulates the distribution of American corals in the Mississippian and Dakota seas.

Schuchert (Charles)—Continued.

6. On new Siluric Cystoidea and a new Camarocrinus.

   Am. Geol., vol. 32, pp. 230–240, 1903.

7. On the lower Devonic and Ontaric formations of Maryland.

   U. S. Nat. Mus., Proc., vol. 26, pp. 413–424, 1903.

   Describes character, occurrence, faunal contents, and geologic relationships of Silurian and Devonian strata in Allegany County, Maryland, and vicinity.

8. A noteworthy crinoid.

   Smithsonian Misc. Coll., vol. 45 (Quart. issue, vol. 1, pts. 3 and 4), p. 450, 1 pl., 1903.

   A brief note on the occurrence of Uintacrinus socialis.

9. Charles Emerson Beecher.

   Am. Jour. Sci., 4th ser., vol. 17, pp. 411–422, 1 pl. (por.), 1904.

   Gives an account of his life and paleontologic work, and a list of his published papers.

10. The stratigraphy and paleontology of the Niagara of northern Indiana.

    Am. Jour. Sci., 4th ser., vol. 18, pp. 465–469, 1904.

    Reviews a paper with the above title in the Twenty-eighth Annual Report of the Geological Survey of Indiana by E. M. Kindle, and discusses the subject-matter of the paper.

11. On Siluric and Devonic Cystidea and Camarocrinus.

    Smith. Misc. Coll., vol. 47 (Quart. issue, vol. 2, pt. 2), pp. 201-272, 11 pls., 24 figs., 1904.

    Describes the occurrence near Keyser, West Virginia, of a cystid fauna, and gives a section of the strata of the Manlius formation at this locality and systematic descriptions of Silurian and Devonian cystids.

12. Dall's Contributions to the Tertiary Fauna of Florida.

    Am. Geol., vol. 33, pp. 143–154, 1904.

13. [Review of] Contributions to Devonian paleontology by H. S. Williams and E. M. Kindle.

    Am. Jour. Sci., 4th ser., vol. 19, pp. 460–463, 1905.

    The reviewer includes notes of his own observations upon the occurrence and relations of Devonian faunas in the Appalachian region.

14. The mounted skeleton of Triceratops prorsus in the U. S. National Museum.

    Am. Jour. Sci., 4th ser., vol. 20, pp. 458–459, 1 pl., 1905.

15. John Bell Hatcher.

    Am. Geol., vol. 35, pp. 131-141, 1 pl. (por.), 1905.

    Includes a list of his published writings.

Schuchert (Charles), assisted by **Dall** (W. H.), **Stanton** (T. W.), and **Bassler** (R. S.).

1. Catalogue of the type specimens of fossil invertebrates in the Department of Geology, United States National Museum.

   U. S. Nat. Mus., Bull. no. 53, pt. 1, 704 pp., 1905.

   In the introduction to the catalogue discusses the kinds and nomenclature of type material.

Schuchert (Charles) and **Buckman** (S. S.).

1. The nomenclature of types in natural history.

   Science, new ser., vol. 21, pp. 899–901, 1905.

Schuchert (Charles), **Ulrich** (E. O.) and.

1. Paleozoic seas and barriers in eastern North America.

   See **Ulrich** (E. O.) and **Schuchert** (C.), 1.

Schultz (Alfred R.).

1. Underground waters of eastern United States: Wisconsin district.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 233–241, 2 figs., 1905.

   Describes briefly the topography, general geology, and the underground water resources.

Schwarz (T. E.).

1. Notes on an occurrence of mica in Boulder County [Colorada].

   Colo. Sci. Soc., Proc., vol. 7, pp. 139–140, 1903.

2. Features of the occurrence of ore at Red Mountain, Ouray County, Colo.

   Am. Inst. Mg. Engrs., Bi-mo. Bull., no. 2, pp. 267–274, 3 figs, 1905.

   Discusses the occurrence of the ore bodies.

Scott (A. C.).

1. A brief summary of glacier work.

Am. Geol., vol. 30, pp. 215-261, 1902.
Gives a general summary of the literature of glaciology.

Scott (Dunkinfield Henry).

1. Studies on fossil botany.

The Macmillan Co., N. Y., 1900. 553 pp. Abstract: Am. Nat., vol. 35, pp. 73-77, 1901.

Scott (O. N.).

1. The ore deposits of Copper Mountain, Similkameen district, British Columbia.

Can. Mg. Inst., Jour., vol. 5, pp. 493-502, 2 figs., 1902; Can. Mg. Rev., vol. 21, pp. 173-176, 2 figs., 1902.
Describes the rocks of this area, the occurrence of the ore bodies, and their origin.

Scott (W. B.).

1. Historical geology.

Sci. Am. Suppl., vol. 52, pp. 21352-21353, 1901.
Abstract of lecture delivered at the Wagner Institute, Philadelphia, Pa.

2. Earth carrying.

Sci. Am. Suppl., vol. 52, p. 21456, 1901.
Abstract of lecture delivered at the Wagner Institute, Philadelphia, Pa.

3. John Bell Hatcher.

Science, new ser., vol. 20, pp. 139-142, 1904.
Gives an account of his life and work.

Scudder (Samuel H.).

1. Canadian fossil insects. 4. Additions to the coleopterous fauna of the inter-Glacial clays of the Toronto district.

Can. Geol. Surv., Contr. to Can. Paleont., vol. 2, pt. 2, pp. 67-90, 8 pls., 1900.

Sears (John Henry).

1. The physical geography, geology, mineralogy, and paleontology of Essex County, Massachusetts.

Salem, Mass., Published by the Essex Institute, 1905. 418 pp., 209 figs., map (in pocket).

Sebbin (E. W.).

1. Geology of Mexico.

Lead & Zinc News, vol. 8, pp. 130-131, 1904.
Gives a brief account of the general geology of Mexico.

Seely (Henry M.).

1. Sketch of the life and work of Augustus Wing.

Am. Geol., vol. 28, pp. 1-8, 1 pl. (por.), 1901; Vt. Geol. Surv., Rept. State Geol., III, pp. 22-30, por., 1902.
Describes the life of Augustus Wing and his work on the geology of Vermont.

2. The geology of Vermont.

The Vermonter, vol. 5, pp. 53-67, illus., 1901.
Gives a general account of the geology of Vermont.

3. Some sponges of the Chazy formation.

Vt. Geol. Surv., Rept. State Geol., III, pp. 151-161, 3 pls., 1902.
Discusses geologic position and gives descriptions of these forms.

4. Sketch of the life and work of Charles Baker Adams.

Am. Geol., vol. 32, pp. 1-12, pl. 1 (por.), 1903; Vt. Geol. Surv., Rept. State Geol., IV, pp. 3-15, 1 pl. (por.), 1904.

5. The Stromatoceria of Isle La Motte, Vermont.

Vt. Geol. Surv., Rept. State Geol., IV, pp. 144-165, 5 pls., 1904.

Sellards (E. H.).

1. Permian plants. Tæniopteris of the Permian of Kansas.

Kan. Univ. Quart., vol. 10, pp. 1-12, 4 pls., 1901.

Sellards (E. H.)—Continued.

2. Fossil plants in the Permian of Kansas.

Kan. Acad. Sci., Trans., vol. 17, pp. 208-209, 1901.

Describes occurrence of the plant remains at various localities.

3. On the fertile fronds of Crossotheca and Myriotheca, and on the spores of other Carboniferous ferns from Mazon Creek, Illinois.

Am. Jour. Sci., 4th ser., vol. 14, pp. 195-202, 1902.

4. On the validity of Idiophyllum rotundifolium Lesquereux, a fossil plant from the Coal Measures of Mazon Creek, Illinois.

Am. Jour. Sci., 4th ser., vol. 14, pp. 203-204, 2 figs., 1902.

Considers that the characters of this fossil plant agree with Neuropteris rarinervis Bunb. and that the genus Idiophyllum has no standing.

5. Some new structural characters of Paleozoic cockroaches.

Am. Jour. Sci., 4th ser., vol. 15, pp. 307-315, 2 pls., 1903.

Discusses structural features and immature stages, and describes several forms of Carboniferous cockroaches.

6. Codonotheca, a new type of spore-bearing organ from the Coal Measures.

Am. Jour. Sci., 4th ser., vol. 16, pp. 87-95, 1 pl., 1903.

7. Discovery of fossil insects in the Permian of Kansas.

Am. Jour. Sci., 4th ser., vol. 16, pp. 323-324, 1903.

8. A study of the structure of Paleozoic cockroaches, with descriptions of new forms from the Coal Measures.

Am. Jour. Sci., 4th ser., vol. 18, pp. 113-134, 213-227, 1 pl., 37 figs., 1904.

Sellards (E. H.), **Beede** (J. W.) and.

1. Stratigraphy of the eastern outcrop of the Kansas Permian.

See **Beede** (J. W.) and **Sellards** (E. H.), 1

Shaaf (Albert), **Price** (J. A.) and.

1. Spy Run and Poinsett lake bottoms.

See **Price** (J. A.) and **Shaaf** (A.), 1.

2. Abandoned meanders of Spy Run Creek [Indiana].

See **Price** (J. A.) and **Shaaf** (A.), 2.

Shaler (M. K.), **Taff** (J. A.) and.

1. Notes on the geology of the Muscogee oil fields, Indian Territory.

See **Taff** (J. A.) and **Shaler** (M. K.), 1.

Shaler (N. S.).

1. Broad valleys of the Cordilleras.

Geol. Soc. Am., Bull., vol. 12, pp. 271-300, 1901.

Discusses the origin and development of these valleys and the bearing of the evidence on the orographic features of the region.

2. A comparison of the features of the earth and the moon.

Smith. Cont. Knowl., vol. 34, pp. 1-79, 25 pls., 1903.

Sharwood (W. J.), **Eakle** (A. S.) and.

1. Luminescent zinc-blende.

See **Eakle** (A. S.) and **Sharwood** (W. J.), 1.

Shattuck (C. H.).

1. A fossil forest in Jackson County [Kansas].

Kans. Acad. Sci., Trans., vol. 19, pp. 107-109, 1 pl., 1 fig., 1905.

Describes the occurrence of fossil plants in the Carboniferous of Jackson County, Kansas.

Shattuck (George Burbank).

1. The Pleistocene problem of the North Atlantic coastal plain.

Johns Hopkins Univ., Circular no. 152, pp. 69-75, 1901; Am. Geol., vol. 28, pp. 87-107, 1901.

Reviews the opinions of various writers on these problems and gives the author's conclusions.

2. Apparent unconformities during periods of continuous sedimentation.

Abstract: Science, new ser., vol. 13, pp. 99-100, 1901.

Shattuck (George Burbank)—Continued.

3. Development of knowledge concerning the physical features of Cecil County [Maryland], with bibliography.

   Md. Geol. Surv., Cecil Co., pp. 31-62, 3 pls., 3 figs., 1902.

4. The physiography of Cecil County [Maryland].

   Md. Geol. Surv., Cecil Co., pp. 63-82, 4 pls., 1 fig., 1902.
   Discusses topographic features and their origin.

5. The geology of the coastal plain formations [of Cecil County, Maryland].

   Md. Geol. Surv., Cecil Co., pp. 149-194, 5 pls., 4 figs., 1902.
   Describes the character, distribution, and history of geologic formations in this county of Quaternary, Tertiary, and Mesozoic age.

6. The Miocene formation of Maryland.

   Abstract: Science, new ser., vol. 15, p. 906, 1902.

7. The Pleistocene problem in Maryland.

   Abstract: Science, new ser., vol. 15, pp. 906-907, 1902.

8. The Mollusca of the Buda limestone, with an appendix on the corals of the Buda limestone.

   U. S. Geol. Surv., Bull. no. 205, 94 pp., 27 pls., 1 fig., 1903.
   Gives a short account of the geology of the Buda limestone in Texas and descriptions of the molluscan fauna found therein.

9. Papers read before the Geological Society of America.

   Science, new ser., vol. 19, pp. 523-533, 1904.

10. The Miocene deposits of Maryland. Geological and paleontological relations, with a review of earlier investigations.

    Md. Geol. Surv., Miocene, pp. xxxiii-cxxxvii, 9 pls., 1904.
    Gives a historical review of investigations upon the Maryland Miocene deposits and a bibliography of literature relating thereto, and describes in detail the character, occurrence, relations, etc., of the Miocene formations in Maryland, with sections of strata and a tabular list of fossils, showing geographic and geologic distribution and range.

Shattuck (George Burbank) and **Miller** (Benjamin Leroy).

1. Physiography and geology of the Bahama Islands.

   Baltimore Geog. Soc.: The Bahama Islands, pp. 3-29, 9 pls., 1905. (New York, The Macmillan Company, 1905.)

Sheak (W. H.), **Blatchley** (W. S.) and.

1. Trenton rock petroleum.

   See **Blatchley** (W. S.) and **Sheak** (W. H.), 1.

Shedd (S.).

1. The iron ores of Washington.

   Wash. Geol. Surv., vol. 1, Ann. Rept. for 1901, pp. 217-256, 4 pls., 1902.
   Discusses the distribution, genesis, and working of the iron ores of the State of Washington, and gives chemical analyses.

2. The building and ornamental stones of Washington.

   Wash. Geol. Surv., vol. 2, Ann. Rept. for 1902, pp. 1-163, 22 pls., 1903.
   Discusses physical properties required in building stones, and describes character, occurrence, and utilization of stone deposits of Washington suitable for building and decorative purposes.

Sheldon (George) and (J. M. Arms).

1. Newly exposed geologic features within the old "8,000 Acre Grant."

   New York, 21 pp., 12 pls., 1903. (Private publication.)
   Describes peculiar structural features in sand and clay deposits and columnar trap formations, and discusses their origin.

Sheldon (J. M. Arms).

1. Concretions from the Champlain clays of the Connecticut Valley.

   Boston, 1900. 45 pp., 14 pls. [Private publication.] Abstract: Am. Jour. Sci., 4th ser., vol. 11, p. 397, 1901.
   Describes the occurrence, character, and constitution of concretions from clay beds in the Connecticut Valley, and discusses their origin.

Shepard (Edward M.).

1. Table of geological formations.

Drury Coll., Bradley Field Geol. Station, Bull., vol. 1, pp. 41-42, 1904.

Gives in tabular form the gelogic formations of Missouri correlated with those of Arkansas.

2. Notes on the wells, springs, and general water resources of Missouri.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 389-440, 1904.

3. The New Madrid earthquake.

Jour. Geol., vol. 13, pp. 45-62, 5 figs., 1905.

Describes the phenomena of the earthquake, features of the earthquake area and associated artesian conditions, and discusses the cause of the earthquake.

4. Spring system of the Decaturville dome, Camden County, Missouri.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 113-125, 4 figs., 1905.

5. Underground waters of eastern United States: Missouri.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 209-219, 3 figs., 1905.

Describes the general geology and the physiographic provinces with particular reference to their underground water supplies.

6. Key to the rocks and geological horizons of Greene County [Missouri].

Drury Coll., Bradley Geol. Field Station, Bull., vol. 1, pp. 53-57, 1905.

Shepherd (E. S.), **Day** (A. L.) and.

1. The phase-rule and conceptions of igneous magmas. Discussion of paper by Mr. T. T. Read.

See **Day** (A. L.) and **Shepherd** (E. S.), 1.

Sheridan (Jo E.).

1. Annual report of the mine inspector for the Territory of New Mexico.

U. S. Mine Inspector for the Territory of N. Mex., Ann. Rept. to the Secretary of the Interior for the year ended June 30, 1904. Washington, 1904, 79 pp.

Includes a description of the New Mexico coal fields, showing the occurrence, character, geologic relations, etc., of the coal seams.

Sherwin (R. S.).

1. Notes on the geology of the Antelope Hills [Oklahoma].

Kans. Acad. Sci., Trans., vol. 18, pp. 83-84, 1903.

Gives a brief account of the geology of this region.

2. Notes on the theories of origin of gypsum deposits.

Kans. Acad. Sci., Trans., vol. 18, pp. 85-88, 1903.

Discusses the origin of the gypsum deposits of Kansas and Oklahoma.

Sherzer (William Hittell).

1. Ice work in southeastern Michigan.

Jour. Geol., vol. 10, pp. 194-216, 8 figs., 1902.

Describes the general topography, drift and ice action, and scouring in the region.

2. Glacial studies in the Canadian Rockies and Selkirks. (Smithsonian Expedition of 1904.) Preliminary report.

Smith. Misc. Coll. (Quart. Issue, vol. 2, pt. 4), vol. 47, pp. 453-496, 13 pls., 31 figs., 1905.

Shimek (B.).

1. Recent decline in the level of Lake Nicaragua.

Am. Geol., vol. 28, pp. 396-398, 1901.

Refers to a paper published in 1896 on the same subject.

2. The loess of Iowa City and vicinity [Iowa].

Iowa State Univ., Lab. Nat. Hist., Bull., vol. 5, pp. 195-212, 1901; Am. Geol., vol. 28, pp. 344-358, 1901.

Gives list of loess and recent fossils, with notes on some of the species.

3. Pyramidula shimekii (Pilsbry) Shimek.

Iowa St. Univ., Lab. Nat. Hist., Bull., vol. 5, pp. 139-145, 1901.

4. The loess of Natchez, Mississippi.

Am. Geol., vol. 30, pp. 279-299, 7 pls., 1902.

Gives lists of fossils found in the loess and describes the formation and character of the loess deposits.

Shimek (B.)—Continued.

5. The loess and the Lansing man.

Am. Geol., vol. 32, pp. 353-369, 1903.

Discusses the character of the fossil shells occurring in the loess and their bearing upon the question of the origin of the loess.

6. Living plants as geological factors.

Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 41-48, 12 pls., 1903.

Discusses the action of plants in the disintegration and formation of deposits.

7. Fresh-water shells in the loess.

Abstract: Geol. Soc. Am., Bull., vol. 15, p. 576. 1904; Science, new ser., vol. 19, p. 533, 1904; Sci. Am. Suppl., vol. 57, p. 23447, 1904.

8. Helicina occulta Say.

Davenport Acad. Sci., Proc., vol. 9, pp. 173-180, 1904.

Discusses the geographical and geological distribution of this mollusk, which occurs in a fossil state in the loess.

9. Papers on the loess.

Iowa State Univ., Lab. Nat. Hist., Bull., vol. 5, pp. 298-381, 1904.

Includes the five following papers.

10. The loess of Natchez, Miss.

Iowa State Univ., Lab. Nat. Hist., Bull., vol. 5, pp. 299-326, 7 pls., 1904.

This paper appeared in the American Geologist, vol. 30, 1902. See above.

11. The loess and the Lansing man.

Iowa State Univ., Lab. Nat. Hist., Bull., vol. 5, pp. 327-346, 1904.

This paper appeared in the American Geologist, vol. 32, 1903. See above.

12. The Lansing deposit not loess.

Iowa State Univ., Lab. Nat. Hist., Bull., vol. 5, pp. 346-352, 3 pls., 1904.

Discusses the characters which distinguish loess deposits, and their bearing upon the kind and age of the deposits containing the Lansing human remains.

13. Loess and the Iowan drift.

Iowa State Univ., Lab. Nat. Hist., Bull., vol. 5, pp. 352-368, 2 pls., 1904.

Discusses the position of loess deposits with reference to drift deposits, and the bearing of these facts upon the question of the formation of the loess, and points out the stratigraphic position of various loess deposits.

14. Evidences (?) of water-deposition of loess.

Iowa State Univ., Lab. Nat. Hist., Bull., vol. 5, pp. 369-381, 2 pls., 1904.

Discusses the evidences advanced for the theory of the deposition of loess by water action.

15. Additional note on Helicina occulta.

Jour. Geol., vol. 13, pp. 232-237, 1905.

Discusses the occurrence of this shell in the loess and the evidence it gives as to climatic conditions.

Shimer (Hervey Woodburn).

1. Petrographic description of the dikes of Grand Isle, Vermont.

Vt. Geol. Surv., Rept. State Geol., III, pp. 174-183, 1902; Columbia Univ., Geol. Dept., Contr., vol. 10, no. 87.

Discusses the composition and occurrence of the dikes on this island.

2. [Report of] Fall excursions of the Geological Department, Columbia University.

Am. Geol., vol. 31, pp. 62-64, 1903.

Contains notes on the geology and petrology of Manhattan Island and localities in the vicinity of New York City.

3. [Field work at Larrabee's Point, Vermont.]

Am. Geol., vol. 32, pp. 130-131, 1903.

4. [Report of] Columbia University Geological Department.

Am. Geol., vol. 32, pp. 259-260, 1903.

Describes observations in northeastern New Jersey.

Shimer (Hervey Woodburn)—Continued.

5. Upper Siluric and Devonic faunas of Trilobite Mountain, Orange County, New York.

N. Y. State Mus., Bull. 80, pp. 173-269, 3 pls. and 10 figs., 1905.

Describes the situation, general geology and geological structure of Trilobite Mountain, with a brief review of the work previously done, and in detail the character, occurrence, and relations of the Devonian formations and the fossil faunas contained in them.

Shimer (Hervey W.) and **Grabau** (Amadeus W.).

1. Hamilton group of Thedford, Ontario.

Geol. Soc. Am., Bull., vol. 13, pp. 149-186, 5 figs., 1902; Columbia Univ., Geol. Dept., Contr., vol. 10, no. 83, 1902.

Describes the lithologic and faunal characters of the local sections, discusses the correlation of the beds and presents notes on some of the species.

Siebenthal (C. E.).

1. On the use of the term Bedford limestone.

Jour. Geol., vol. 9, pp. 234-235, 1901.

Discusses the use of the name in Ohio and Indiana and considers that the Bedford of Indiana has priority.

2. The Silver Creek hydraulic limestone of southeastern Indiana.

Ind., Dept. of Geol. and Nat. Res., 25th Ann. Rept., pp. 331-389, 2 pls., 2 figs., 1901.

Reviews the geologic literature regarding the region, describes the stratigraphic and paleontologic features and nomenclature of the Devonian formations, and gives an account of the economic uses of the limestone.

3. The Indiana oolitic limestone industry in 1900.

Ind., Dept. of Geol. and Nat. Res., 25th Ann. Rept., pp. 390-393, 1901.

4. Structural features of the Joplin district [Missouri].

Econ. Geol., vol. 1, pp. 119-128, 1 pl., 1905.

Reviews the views of previous workers in the area regarding the structure of the district and the origin of the ores, and describes the geologic structure of the Cornfield region and discusses its origin.

Silver (L. P.).

1. The sulphide ore bodies of the Sudbury region [Ontario].

Can. Mg. Inst., Jour., vol. 5, pp. 528-551, 1 fig., 9 pls., 1902; Can. Mg. Rev., vol. 21, pp. 207-211, 1902.

Discusses the occurrence and origin of the nickel-bearing ore deposits.

2. Petrography of some igneous rocks of the Kettle River mining division, British Columbia.

Ottawa Nat., vol. 17, pp. 85-91, 1903.

Describes their characters and occurrence.

Simmersbach (B.).

1. Die Steinkohlengebiete von Pennsylvanien und Westvirginien.

Zeitsch. f. prak. Geol., vol. 11, pp. 413-423, 1 fig., 1903.

Gives a general account of the Appalachian coal field, describing its geographic extent, and the succession, thickness, character, and distribution of the geologic formations.

Simmons (Jesse).

1. Tungsten ores in the Black Hills.

Mg. Rep., vol. 50, pp. 217-218, 1904.

Describes the occurrence and character of tungsten ores and discusses their origin.

Simonds (Frederic William).

1. The minerals and mineral localities of Texas.

Abstract: Science, new ser., vol. 14, p. 797, 1901.

Gives an account of the preparation of a list of Texas minerals and localities.

2. Dr. Ferdinand von Roemer, the father of Texas geology; his life and work.

Am. Geol., vol. 29, pp. 131-140, pl., 1902.

3. The minerals and mineral localities of Texas.

Tex. Univ., Min. Surv., Bull. no. 5, pp. 3-95, 1902.

Describes characters and occurrences of minerals found in Texas.

Simonds (Frederic William)—Continued.

4. The geography of Texas, physical and political.

Boston, Ginn & Company, 1905. 237 pp., 133 figs.
Includes a chapter on the geology of Texas.

Simpson (Howard E.).

1. The accretion of flood plains by means of sand bars.

Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 54-56, 1903.

Sinclair (William J.).

1. The discovery of a new fossil tapir in Oregon.

Jour. Geol., vol. 9, pp. 702-707, 1 fig., 1901.
Describes Protapirus robustus n. sp. from the John Day beds.

2. A preliminary account of the exploration of the Potter Creek cave, Shasta County, California.

Science, new ser., vol. 17, pp. 708-712, 1903.
Describes the situation of the cave, the deposits in it, and the occurrence of vertebrate remains, with a list of the forms identified.

3. Mylagaulodon, a new rodent from the upper John Day of Oregon.

Am. Jour. Sci., 4th ser., vol. 15, pp. 143-144, 1 fig., 1903.
Describes the characters and relations of a new genus and species.

4. A new tortoise from the auriferous gravels of California.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 243-248, 2 figs., 1903.

5. The exploration of the Potter Creek cave [California].

Cal. Univ. Publ., Am. Arch. & Eth., vol. 2, pp. 1-27, 14 pls., 1904.
Describes the general geology and physiography of the region, the stratigraphy of the cave deposits, the occurrence of the remains of Quaternary vertebrates, with a list of identified forms, and their relations to other faunas.

6. New or imperfectly known rodents and ungulates from the John Day series.

Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 125-143, 5 pls., 1905.

7. New Mammalia from the Quaternary caves of California.

Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 145-161, 4 pls., 2 figs., 1905.

Sinclair (William J.) and **Furlong** (E. L.).

1. Euceratherium, a new ungulate from the Quaternary caves of California.

Cal. Univ., Dept. Geol., Bull., vol. 3, pp. 411-418, 2 pls., 1 fig., 1904.

Sinclair (William J.), **Merriam** (John C.) and.

1. The correlation of the John Day and the Mascall.

See **Merriam** (J. C.) and **Sinclair** (W. J.), 1.

Skeat (Ethel G.).

1. The Jurassic rocks of East Greenland.

Geol. Assoc., Proc., vol. 18, pp. 336-350, 1 pl., 1904.
Gives an historical review of geological exploration in East Greenland, describes the general geologic structure and the occurrence of Jurassic strata and their fossil contents, and discusses the distribution of land and sea during Jurassic time.

Skinner (W. W.).

1. The underground waters of Arizona—their character and uses.

Ariz. Univ. Agric. Exp. Sta., Bull. no. 46, pp. 273-296, 1 pl., 1903.

Slichter (Charles S.).

1. The motions of underground waters.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 67, 106 pp., 50 figs., 8 pls., 1902.

2. Field measurements of the rate of movement of underground waters.

U. S. Geol, Surv., Water-Supply and Irrigation Paper no. 140, 122 pp., 15 pls., 67 figs., 1905.

Sloan (Earl).

1. The mineral resources of South Carolina.

Am. Mg. Cong., 7th Ann. Sess., Rept. of Proc., pp. 129-160, 1905.

Slosson (E. E.) and **Moody** (R. B.).

1. The Laramie cement plaster.

Wyo. Univ., Agr. Coll., 10th Ann. Rept., 18 pp., 1 pl., 1900.
Describes the occurrence of gypsum beds and the composition and manufacture of cement plaster.

Slosson (E. E.), **Knight** (W. C.) and.

1. Alkali lakes and deposits [Wyoming].

See **Knight** (W. C.) and **Slosson** (E. E.), 1.

2. The Dutton, Rattlesnake, Arago, Oil Mountain, and Powder River oil fields [Wyoming].

See **Knight** (W. C.) and **Slosson** (E. E.), 2.

3. The Newcastle oil field [Wyoming].

See **Knight** (W. C.) and **Slosson** (E. E.), 3.

4. The Bonanza, Cottonwood, and Douglas oil fields.

See **Knight** (W. C.) and **Slosson** (E. E.), 4.

Smallwood (W. M.) and **Hopkins** (T. C.).

1. A discussion of the origin of some anticlinal folds near Meadville, Pennsylvania.

Syracuse Univ., Bull., ser. 4, no. 1., pp. 18-24, 1903.
Describes drainage and geological structure of this region.

Smallwood (Martin), **Hopkins** (T. C.) and.

1. On some anticlinal folds [Pennsylvania].

See **Hopkins** (T. C.) and **Smallwood** (Martin), 1.

Smith (A. F.), **Ball** (Sydney H.) and.

1. The geology of Miller County.

See **Ball** (Sydney H.) and **Smith** (A. F.), 1.

Smith (A. F.), **Buckley** (E. R.), **Ball** (S. H.), and.

1. Glacial boulders along the Osage River in Missouri.

See **Buckley** (E. R.), **Ball** (S. H.), and **Smith** (A. F.), 1.

Smith (Alexander H.).

1. "Los Reyes" gold mines, southern Mexico.

Can. Mg. Inst., Jour., vol. 8, pp. 272-284, 1 fig., 1905.
Includes notes on the geology of the region.

Smith (Alva J.).

1. The Americus limestone.

Kans. Acad. Sci., Trans., vol. 17, pp. 189-190, 3 pls., 1901.
Describes its distribution in Lyon County, Kansas, and its petrographic and faunal characters.

2. A bulletin on Lyon County geology.

Emporia, Kansas, 1902. 11 pp., 4 pls. (Private publication.)
Describes the topography and general geology of Lyon County, Kansas. Parts of the paper were presented to the Kansas Academy of Science, and published in its Transactions, vols. 16 and 17.

3. Geology of Lyon County, Kansas.

Kans. Acad. Sci., Trans., vol. 18, pp. 99-108, 1903.
Describes the stratigraphy.

4. Reading blue limestone.

Kans. Acad. Sci., Trans., vol. 19, pp. 150-153, 1 pl., 1905.

Smith (Burnett).

1. Senility among gastropods.

Phila. Acad. Nat. Sci., Proc., vol. 57, pp. 345-361, 2 pls., 2 figs., 1905.

Smith (Charles E.).

1. Work of the Cornell Summer School of field geology.

Am. Geol., vol. 30, pp. 396-397, 1902.

Smith (Dwight T.).

1. A geological reconnoissance of the region of the upper main Walker River, Nevada.

   Abstract: Eng. & Mg. Jour., vol. 75, p. 154, 1903; Jour. Geol., vol. 11, pp. 94-95, 1903.

2. The geology of the upper region of the main Walker River, Nevada.

   Cal. Univ., Dept. Geol., Bull, vol. 4, pp. 1-32, 4 pls. and 2 figs., 1904.

   Describes the physical features of the region, the occurrence, character, and geologic relations of the sedimentary Tertiary and igneous rocks, the unconformities between formations, the geological structure of the area, and the character and occurrence of gold and copper ore deposits.

Smith (E. Percy) and **Dominian** (Leon).

1. Notes on a trip to White Oaks, New Mexico.

   Eng. & Mg. Jour., vol. 77, pp. 799-800, 1904.

   Gives observations on the economic resources and geology of the region.

Smith (Eugene Allen).

1. Carboniferous fossils in "Ocoee" slates in Alabama.

   Science, new ser., vol. 18, pp. 244-246, 1903.

   Discusses the determinations of the age of the Ocoee slates and related formations and the occurrence in them of Carboniferous plants in Clay County, Alabama.

2. The Portland-cement materials of central and southern Alabama.

   Cement Resources of Alabama. 58th Cong., 1st sess., Sen. Doc. no. 19, pp. 12-23, map, 1903.

   Describes character and distribution of Cretaceous and Tertiary limestones suitable for use in the manufacture of Portland cement. Includes a map showing the distribution of these limestones and the coal of northern Alabama.

3. The cement resources of Alabama.

   U. S. Geol. Surv., Bull. no. 225, pp. 424-447, 1904.

   Describes location, geologic horizon, character, and availability for cement manufacture of the limestones and clays of Alabama.

4. The cement resources of Alabama.

   Ala. Geol. Surv., Bull. no. 8, pp. 61-93, 16 pls. (incl. geol. map), 1904.

   Describes the occurrence, character, and geological relations of limestones in Alabama available for cement manufacture.

5. Notes on the wells, springs, and general water resources of Alabama.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 276-331, 1904.

6. Underground waters of eastern United States: Alabama.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 164-170, 1 pl., 1905.

   Describes briefly the geologic formations of the State and their water-bearing conditions.

7. Biographical sketch of Henry McCalley.

   Am. Geol., vol. 35, pp. 197-201, 1 pl. (por.), 1905.

   Includes a list of his published writings.

8. Portland-cement materials of Alabama.

   U. S. Geol. Surv., Bull., no. 243, pp. 60-84, 1 pl., 1905.

   Describes the general geology and the occurrence and geological relations of limestones and other cement materials of Alabama.

9. Revised map of the southeastern part of the Cahaba coal field, with columnar section.

   Ala. Geol. Surv., 1905

Smith (Eugene Allen) and **Aldrich** (Truman H.).

1. The Grand Gulf formation.

   Science, new ser., vol. 16, pp. 835-837, 1902.

   Discusses the age of this formation in the light of new data obtained by the authors.

2. The Grand Gulf formation.

   Science, new ser., vol. 18, pp. 20-26 1903.

   Discusses stratigraphic position of the Grand Gulf formation.

Smith (Eugene Allen) and **McCalley** (Henry).

1. Index to the mineral resources of Alabama.

Ala. Geol. Surv., 79 pp., map and 6 pls., 1904.

Describes the occurrence, geologic relations, and character of the economic resources of Alabama.

Smith (Frank B.).

1. Coal mining in the Northwest Territories and its probable future.

Can. Mg. Inst., Jour., vol. 5, pp. 104-112, 1902; Can. Mg. Rev., vol. 21, pp. 79-81, 1902.

Contains notes on the geologic occurrence of the coals.

2. The Frank disaster [Alberta].

Can. Mg. Rev., vol. 22, pp. 102-103, 1903.

Describes the landslide and attendant disasters at Frank, Alberta.

Smith (Fred D.).

1. The Osceola, Nevada, tungsten deposits.

Eng. & Mg. Jour., vol. 73, pp. 304-305, 1902.

Describes the occurrence and character of the ores.

Smith (G. F. Herbert).

1. On the remarkable problem presented by the crystalline development of calaverite.

Min. Mag., vol. 13, pp. 122-150, 9 figs., 1902.

Smith (G. H.).

1. Stateline mining district, Iron County, Utah.

Mg. & Sci. Press, vol. 84, p. 101, 1902.

Describes the general geology of the region and the mining developments.

Smith (George).

1. [In discussion of paper by S. F. Emmons, "The secondary enrichment of ore deposits."]

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1055-1059, 1903.

Discusses formation of certain ore deposits.

Smith (George Otis).

1. The geology of Mount Rainier.

Mazama, vol. 2, no. 1, pp. 18-24, 1900.

Describes geologic history of Mount Rainier and the character and occurrence of its igneous rocks.

2. A geological study of the Fox Islands, Maine.

Colby College, Bull., vol. 1, supplement, pp. 1-53, and geologic map, 1901.

Describes the character and occurrence of the sedimentary and igneous rocks and the geologic history of the islands.

3. Geology and water resources of a portion of Yakima County, Washington.

U. S. Geol. Surv., Water-Supply and Irrigation Papers, no. 55, pp. 1-68, 7 pls., 8 figs., 1901.

Describes the geographic and geologic features of the region and the water resources.

4. The Mount Baker mining district, Washington.

Eng. & Mg. Jour., vol. 73, pp. 379-380, 1902.

Contains notes on the geologic structure of this area and the occurrence of gold.

5. Criticism of Doctor Jenney's paper [The mineral crest].

Eng. & Mg. Jour., vol. 73, p. 826, 1902.

Discusses the subject in the light of observations in the Tintic district, Utah.

6. The coal fields of the Pacific coast.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 473-513, 4 pls., 18 figs., 1902.

Describes location, geologic relations, and structure of the Pacific coast coal fields occurring in Washington, California, and Oregon, the number, extent, and occurrence of the workable beds, and the character, composition, mining, and distribution of the coals.

7. Ellensburg folio, Washington.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 86, 1903.

Describes geographic features, drainage, and water supply of the Ellensburg quadrangle, the geologic history of the Cascade Mountains and of the Ellensburg quadrangle, and the character and occurrence of Miocene strata and igneous rocks, and discusses character and origin of structural and physiographic features and economic resources of the quadrangle.

Smith (George Otis)—Continued.

8. Geology and physiography of central Washington.

U. S. Geol. Surv., Professional Paper no. 19, pp. 9-39, 7 pls., 1 fig., 1903.

Reviews previous work upon the region, describes the character, extent, and relations of igneous rocks and sedimentary strata of pre-Eocene, Eocene, and Miocene age, the geologic history and structure, and physiographic features and history.

9. Gold mining in central Washington.

U. S. Geol. Surv., Bull. no. 213, pp. 76-80, 1903.

Describes occurrence of gold in gravel deposits and quartz veins, and the mining operations in the district.

10. Anticlinal mountain ridges in central Washington.

Jour. Geol., vol. 11, pp. 166-177, 1 fig., 1903.

Reviews previous work in the area and describes its geological structure.

11. [Discussion of paper by W. P. Jenney, "The mineral crest, or the hydrostatic level attained by the ore-depositing solutions in certain mining districts of the Great Salt Lake Basin."]

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1060-1062, 1903.

Gives geologic observations bearing upon the subject of the paper discussed.

12. Abandoned stream gaps in northern Washington.

Abstract: Science, new ser., vol. 17, pp. 387-388, 1903.

13. Mount Stuart folio, Washington.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 106, 1904.

Describes physiographic features, the geologic history and structure, the occurrence, character, and relations of pre-Tertiary and Tertiary strata and igneous rocks, and the economic resources, chiefly gold and coal.

14. Quartz veins in Maine and Vermont.

U. S. Geol. Surv., Bull. no. 225, pp. 81-88, 1904.

Describes the occurrence and character of quartz veins carrying precious metals.

15. Stratigraphic problems in the northern Cascades.

Abstract: Science, new ser., vol. 19, p. 921, 1904.

16. A molybdenite deposit in eastern Maine.

U. S. Geol. Surv., Bull. no. 260, pp. 197-199, 1905.

Describes the occurrence and character of molybdenite deposits.

17. The granite industry of the Penobscot Bay quadrangle, Maine.

U. S. Geol. Surv., Bull. no. 260, pp. 489-492, 1905.

Describes the occurrence, quarrying, and production of granite in this part of Maine.

18. Water resources of the Portsmouth-York region, New Hampshire and Maine.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 120-128, 1905.

Includes some account of the geologic conditions of the area.

19. Water supply from Glacial gravels near Augusta, Me.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 156-160, 1 fig., 1905.

20. Artesian water in crystalline rocks.

Abstract: Science, new ser., vol. 21, pp. 224-225, 1905.

Discusses the presence of artesian water in crystalline rocks in the vicinity of York, Maine.

Smith (George Otis) and **Calkins** (Frank C.).

1. A geological reconnaissance across the Cascade Range near the Forty-ninth Parallel.

U. S. Geol. Surv., Bull. no. 235, 103 pp., 4 pls., 1 fig., 1904.

Describes the topography and general geology of the region, the occurrence, character, and relations of the pre-Cretaceous, Cretaceous, Tertiary, and Quaternary formations, and the occurrence and petrographic characters of the metamorphic and igneous rocks.

Smith (George Otis) and **White** (David).

1. The geology of the Perry basin in southeastern Maine.

U. S. Geol. Surv., Professional Paper no. 35, 107 pp., 6 pls., 1905.

Reviews previous work in the area, describes the character, occurrence, and geologic relations of Silurian and Devonian sedimentary rocks and associated lavas, gives systematic descriptions of Devonian plant remains, and discusses the search for coal in Maine.

Smith (George Otis) and **Willis** (Bailey).

1. The Clealum iron ores, Washington.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 356–366, 1 fig., 1901.

Describes the character, occurrence, and origin of the ores and the general geologic and structural features of the region.

Smith (James Perrin).

1. The border line between the Paleozoic and Mesozoic in western America.

Jour. Geol., vol. 9, pp. 512–521, 1901.

Discusses briefly the criteria by which geologic time divisions of the line between this Paleozoic and Mesozoic as influenced by the faunas of certain beds of Idaho and California and their relation to allied Asiatic and European faunas.

2. Ueber Pelecypodenzonen in der Trias Nord-Amerikas.

Centralbl. für Min., etc., no. 22, pp. 689–695, 1902.

Describes the distribution of Trias sediments and gives a table showing the occurrence and relations of pelecypods in the Trias in North America.

3. The Carboniferous ammonoids of America.

U. S. Geol. Surv., Mon., vol. 42, 211 pp., 29 pls., 1903.

Reviews briefly the occurrence of ammonoids in the different Carboniferous formations of America, gives tables of the correlation of Carboniferous formations, discusses the classification and phylogeny, and describes and figures American genera and species.

4. Periodic migrations between the Asiatic and the American coasts of the Pacific Ocean.

Am. Jour. Sci., 4th ser., vol. 17, pp. 217–233, 1904.

Discusses geographic distribution and relations, and evidences of migrations and derivations of faunas in various provinces in Paleozoic, Mesozoic, and Tertiary time, and physiographic changes.

5. The comparative stratigraphy of the marine Trias of western America.

Cal. Acad. Sci., Proc., 3d ser., vol. 1, pp. 323–430, 10 pls., 1904.

Describes the general development of Triassic formations in the various geographic provinces of the world, their correlation and faunal characteristics, and in detail the Triassic strata of western North America, and gives systematic descriptions of Triassic genera and species of cephalopods.

Smith (James Perrin) and **Weller** (Stuart).

1. Prodromites, a new ammonite genus from the Lower Carboniferous.

Jour. Geol., vol. 9, pp. 255–268, 3 pls., 1901.

Discusses the occurrence of ammonites in upper Paleozoic rocks of the Mississippi Valley, and describes a new genus and two new species.

Smith (J. P.), **Hyatt** (A.) and.

1. The Triassic cephalopod genera of America.

See **Hyatt** (A.) and **Smith** (J. P.), 1.

Smith (Otto M.) and **Standley** (Paul C.).

1. The Pierson Creek mines [Missouri].

Drury Coll., Bradley Geol. Field Station, Bull., vol. 1, pp. 72-79, 1 fig., 1905.

Contains notes on the occurrence and geologic relations of lead and zinc ores.

Smith (Philip S.), **Smyth** (Henry Lloyd) and.

1. The copper deposits of Orange County, Vermont.

See **Smyth** (Henry Lloyd) and **Smith** (Philip S.), 1.

Smith (W. D.).

1. Advance report to the chief of the Mining Bureau upon the coal deposits of Batan Island [Philippine Islands].

U. S. War Dept., Bureau of Insular Affairs, Washington, pp. 35–58, 1905.

Smith (W. D.).

1. The development of Scaphites.

Jour. Geol., vol. 13, pp. 635–654, 3 pls., 1905.

Smith (W. N.).

1. Loon Lake iron-bearing district [Ontario].

Ontario Bur. Mines, Rept., 1905, vol. 14, pt. 1, pp. 254-260, 1905.

Describes the general geology of the region and the occurrence, character, and relations of deposits of iron ore.

Smith (W. S. Tangier).

1. Hartville folio, Wyoming.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 91, 1903.

Describes geographic and topographic features, character, and occurrence of igneous rocks and sedimentary deposits of Algonkian, Carboniferous, Juratrias, Cretaceous, Tertiary, and Quaternary systems, the geologic history and economic products.

2. Lead and zinc deposits of the Joplin district, Missouri-Kansas.

U. S. Geol. Surv., Bull. no. 213, pp. 197-204, 1903.

Describes briefly the stratigraphy and geologic structure of the region and the character, occurrence, and origin of the ores.

3. Lead, zinc, and fluorspar deposits of western Kentucky. Part II. Ore deposits and mines.

U. S. Geol. Surv., Professional Paper no. 36, pp. 107-207, 8 pls., 31 figs., 1905.

Describes the character, occurrence, production, and origin of the lead and zinc ores and fluorite deposits and the mining operations.

4. Water resources of the Joplin district, Missouri-Kansas.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 74-83, 1905.

5. Igneous rocks of the Sundance folio, Wyoming-South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 127, 1905.

Describes the character, occurrence, and relations of Algonkian (?) and Tertiary intrusive rocks in the area.

6. Igneous rocks of the Aladdin quadrangle, Wyoming-South Dakota-Montana.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 128, 1905.

Describes the occurrence, character, and relations of Algonkian intrusive and Tertiary igneous rocks of this area.

Smith (W. S. Tangier), **Darton** (N. H.) and.

1. Edgemont folio, South Dakota-Nebraska.

See **Darton** (N. H.) and **Smith** (W. S. Tangier), 1.

Smith (W. S. Tangier), **Ulrich** (E. O.) and.

1. Lead, zinc, and fluorspar deposits of western Kentucky.

See **Ulrich** (E. O.) and **Smith** (W. S. T.), 1.

Smock (John C.).

1. Administrative report. (New Jersey Geological Survey.)

N. J. Geol. Surv., Ann. Rept. for 1900, pp. xi-xl, 1901.

Gives an account of the work of the Survey for the year, and discusses the character and relations of the surface formations of southern New Jersey.

Smyth (C. H., jr.).

1. Geology of the crystalline rocks in the vicinity of the St. Lawrence River.

N. Y. State Mus., 53d Ann. Rept., vol. 1, pp. r85-r104, 12 pls. and geologic map, 1901.

Describes the gneiss and associated rocks of the region.

2. Petrography of recently discovered dikes in Syracuse, New York, with note on the presence of melilite in the Green Street dike.

Am. Jour. Sci., 4th ser., vol. 14, pp. 26-30, 1902.

Describes the megascopic and microscopic characters of the dike rocks.

3. Tourmaline contact zones near Alexandria Bay, New York.

Am. Geol., vol. 29, pp. 377-383, 1902.

Describes the general characters and occurrence of the tourmaline zones and of the associated rocks.

4. The Rossie lead veins [New York].

School of Mines Quart., vol. 24, pp. 421-429, 1 fig., 1903.

Describes the character and occurrence of the rocks and galena-bearing veins, and discusses the origin and age of the vein-filling materials.

Smyth (C. H., jr.)—Continued.

5. Notes on the economic geology of Oneida County [New York].

N. Y. State Mus., 56th Ann. Rept., pp. r115-r117, 1901.

Describes occurrence and production of the economic resources of this county.

6. Replacement of quartz by pyrite and corrosion of quartz pebbles.

Am. Jour. Sci., 4th ser., vol. 19, pp. 277-285, 1 pl. and 1 fig., 1905.

7. The abstraction of oxygen from the atmosphere by iron.

Jour. Geol., vol. 13, pp. 319-323, 1905.

Smyth (H. L.).

1. The origin and classification of placers.

Eng. & Mg. Jour., vol. 79, pp. 1045-1046, 1179-1180, 1228-1230, 2 figs., 1905.

Smyth (Henry Lloyd) and **Smith** (Philip S.).

1. The copper deposits of Orange County, Vermont.

Eng. & Mg. Jour., vol. 77, pp. 677-678, 1904.

Describes the general geology of the region, and the character, occurrence, and origin of the copper ores.

Sollas (W. J.).

1. Evolutional geology.

Smith. Inst., Ann. Rept. 1900, pp. 289-314, 1 pl., 1901.

Souder (Harrison).

1. Mineral deposits of Santiago, Cuba.

Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 308-321, 11 figs., 1905.

Describes the occurrence and mining of manganese, copper, and iron ores in the vicinity of Santiago, Cuba.

Sovereign (L. Douglas).

1. Gems and rare minerals of southern California.

So. Cal. Acad. Sci., Bull., vol. 4, pp. 85-90, 1905.

Describes the occurrence of valuable mineral deposits in San Diego County, Cal.

Spalding (E. P.).

1. The quicksilver mines of Brewster County, Texas.

Eng. & Mg. Jour., vol. 71, pp. 749-750, 6 figs., 1901.

Contains notes on the character and occurrence of the ore.

Spencer (Arthur Coe).

1. The iron ores of Santiago, Cuba.

Eng. & Mg. Jour., vol. 72, pp. 633-634, 6 figs., 1901.

Describes the character and geologic relations of the ore bodies.

2. The physiography of the Copper River basin, Alaska.

Abstract: Science, new ser., vol. 13, p. 189, 1901.

Contains abstract of paper read before the Geological Society of Washington.

3. The manganese deposits of Santiago Province, Cuba.

Eng. & Mg. Jour., vol. 74, pp. 247-248, 3 figs., 1902.

4. The Pacific mountain system of British Columbia and Alaska.

Abstract: Science, new ser., vol. 16, pp. 261-262, 1902.

Discusses physiography of the mountainous region bordering the Pacific Ocean.

5. Pacific mountain system in British Columbia and Alaska.

Geol. Soc. Am., Bull., vol. 14, pp. 117-132, 6 pls., 1903.

Describes physiographic features and discusses their origin.

6. Mineral resources of the Encampment copper region, Wyoming.

U. S. Geol. Surv., Bull. no 213, pp. 158-162, 1903.

Gives an account of the general geology of this region, and the character and occurrence of the deposits of copper ores.

7. Reconnaissance examination of the copper deposits at Pearl, Colo.

U. S. Geol. Surv., Bull. no. 213, pp. 163-169, 1903.

Gives a brief account of the geography and geology of this region, and describes the mining developments.

Spencer (Arthur Coe)—Continued.

8. Manganese deposits of Santiago, Cuba.

U. S. Geol. Surv., Bull. no. 213, pp. 251-255, 1903.

Describes briefly the geologic structure of the region and the occurrence and probable output of manganese ores.

9. The Juneau gold belt, Alaska.

U. S. Geol. Surv., Bull. no. 225, pp. 28-42, 1904.

Describes the general geology and the occurrence and mining of gold.

10. The copper deposits of the Encampment district, Wyoming.

U. S. Geol. Surv., Professional Paper no. 25, 107 pp., 2 pls. (maps), 49 figs., 1904.

Describes the general geology and the character and occurrence of Mesozoic, Tertiary, pre-Cambrian, and igneous rocks, and copper and silver ore deposits, and discusses the origin of the copper-ore bodies.

11. The geology of the Treadwell ore deposits, Douglas Island, Alaska.

Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 473-510, 12 figs., 1905. Mg. & Sci. Press, vol. 89, pp. 240-241, 259-260, 274, 292-293, 310, 325-326, 344, 1904. Abstract: Mg. Rep., vol. 50, pp. 616-617, 1904.

Describes the general geology, the occurrence, character, and relations of intrusive, igneous, and sedimentary rocks, and the occurrence, geologic relations, character, and origin of the gold ore deposits.

12. Genesis of the magnetite deposits in Sussex Co., New Jersey.

Mg. Mag., vol. 10, pp. 377-381, 4 figs., 1904.

13. Pre-Cambrian rocks of the Franklin Furnace quadrangle [New Jersey].

Abstract: Science, new ser., vol. 21, p. 391, 1905.

14. The Treadwell ore deposits, Douglas Island.

U. S. Geol. Surv., Bull. no. 259, pp. 69-87, 4 figs., 1905.

Describes the general geology, the character, and occurrence of the gold-ore deposits, and surrounding rocks.

15. Progress of work in the pre-Cambrian rocks [of New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1904, pp. 247-252, 1905.

16. What is a fissure vein?

Econ. Geol., vol. 1, pp. 289-294, 1905.

17. The magmatic origin of vein-forming waters in southeastern Alaska.

Am. Inst. Mg. Engrs., Bi-Mo. Bull., no. 5, pp. 971-978, 1905.

18. The origin of vein-filled openings in southeastern Alaska.

Am. Inst. Mg. Engrs., Bi-Mo. Bull., no. 6, pp. 1211-1216, 3 figs., 1905.

Spencer (Arthur Coe), **Hayes** (C. Willard), **Vaughan** (T. Wayland), and.

1. Report on a geological reconnaissance of Cuba.

See **Hayes** (C. W.), **Vaughan** (T. W.), and **Spencer** (A. C.), 1.

Spencer (Arthur Coe), **Schrader** (Frank C.) and.

1. The geology and mineral resources of a portion of the Copper River district, Alaska.

See **Schrader** (F. C.) and **Spencer** (A. C.), 1.

Spencer (Joseph William Winthrop).

1. On the geological and physical development of Antigua.

London Geol. Soc., Quart. Jour., vol. 57, pp. 490-505, and map, 1901.

2. On the geological and physical development of Guadelupe.

London Geol. Soc., Quart. Jour., vol. 57, pp. 506-519, 1901.

3. On the geological and physical development of Anguilla, St. Martin, St. Bartholomew, and Sombrero.

London Geol. Soc., Quart. Jour., vol. 57, pp. 520-533, 1901.

4. On the geological and physical development of the St. Christopher chain and Saba Banks.

London Geol. Soc., Quart. Jour., vol. 57, pp. 534-544, 1901.

Spencer (Joseph William Winthrop)—Continued.

5. On the geological and physical development of Dominica; with notes on Martinique, St. Lucia, St. Vincent, and the Grenadines.

   London Geol. Soc., Quart. Jour., vol. 58, pp. 341-353, 1 pl. [map], 2 figs., 1902.

   Contains notes on physiography and on the volcanic, gravel, and terrace formations.

6. On the geological and physical development of Barbados; with notes on Trinidad.

   London Geol. Soc., Quart. Jour., vol. 58, pp. 354-370, 2 figs., 1902.

   Discusses the physiographic and stratigraphic features.

7. The Windward Islands of the West Indies.

   Can. Inst., Trans., vol. 7, pp. 351-370, 14 pls., 1902.

   Gives an account of physiographic and geologic features of these islands.

8. On the geological relationship of the volcanoes of the West Indies.

   Victoria Inst., Jour. Trans., vol. 35, pp. 198-207, 1 fig., 1903.

   Discusses physiographic features and changes of the West Indies islands and the submerged plateau upon which they rest, the place of their igneous formations in geologic history, and the evidences of the geologic age of the volcanic activity and its relations to physical changes in the Antillean region.

9. Geological age of the West Indian volcanic formations.

   Am. Geol., vol. 31, pp. 48-51, 1 fig., 1903.

   Discusses the geologic history of the region.

10. Submarine valleys off the American coast and in the North Atlantic.

    Geol. Soc. Am., Bull., vol. 14, pp. 207-226, 2 pls., 2 figs., 1903.

    Describes the submerged Atlantic coastal plain from Cape Hatteras to Newfoundland and the channels traversing it, discusses geological data and evidences of the age of the submerged valleys, and describes submerged valleys of the North Atlantic and adjacent Arctic basins.

11. A rejoinder to Dr. Dall's criticism on Dr. Spencer's hypothesis concerning the late union of Cuba with Florida.

    Am. Geol., vol. 34, pp. 110-119, 1904.

12. The submarine great canyon of the Hudson River.

    Am. Geol., vol. 34, pp. 292-293, 1904.

    Describes the course, depth, etc., of the Hudson River channel.

13. The submarine great canyon of the Hudson River.

    Am. Jour. Sci., 4th ser., vol. 19, pp. 1-15, 3 figs., 1905. Geog. Jour., vol. 25, pp. 180-190, 3 figs., 1905.

    Reviews previous work upon the subject and gives additional data upon the position, depth, and character of the Hudson River canyon, and discusses its origin.

14. On the physiographic improbability of land at the North Pole.

    Am. Jour. Sci., 4th ser., vol. 19, pp. 333-340, 1 fig. (map), 1905.

15. Bibliography of submarine valleys off North America.

    Am. Jour. Sci., 4th ser., vol. 19, pp. 341-344, 1905.

16. Dr. Nansen's "Bathymetrical features of the north polar sea, with a discussion of the continental shelves and the previous oscillations of the shore-line."

    Am. Geol., vol. 35, pp. 221-235, 1905.

17. [Discussion of paper by R. S. Tarr, "Gorges and waterfalls of central New York."]

    Intern. Geog. Cong., Eighth, Rept., pp. 136-137, 1905.

Spencer (W. K.).

1. On the structure and affinities of Palæodiscus and Agelacrinus.

   Roy. Soc., Proc., vol. 74, pp. 31-46, 1 pl., 12 figs., 1904.

   The investigation described is based in part upon specimens of Agelacrinus from the Ordovician of Ohio.

Spillman (W. J.).

1. Natural mounds.

   Science, new ser., vol. 21, p. 632, 1905.

   Discusses the occurrence and origin of these mounds in southwestern Missouri.

Spinks (Charles H.).

1. Magnesite and its uses.

   Cal. Jour. Techn., vol. 4, pp. 68-71, 1904.

   Describes the occurrence and geologic relations of magnesite deposits in southern California, and discusses their origin.

Springer (Ada).

1. On some living and fossil snails of the genus Physa, found at Las Vegas, New Mexico.

   Phila. Acad. Nat. Sci., Proc., vol. 54, pp. 513-516, 1 pl., 2 figs., 1902.

Springer (Frank).

1. Uintacrinus: its structure and relations.

   Harvard Coll., Mus. Comp. Zool., Mem., vol. 25, no. 1, pp. 1-89, 8 pls., 1901.

   Describes occurrence, structure, and relations of this crinoid from Cretaceous strata.

2. On the crinoid genera Sagenocrinus, Forbesiocrinus, and allied forms.

   Am. Geol., vol. 30, pp. 88-97, 1 fig., 1902.

   Includes description of a new species of Sagenocrinus.

3. Cleiocrinus.

   Harvard Coll., Mus. Comp. Zool., Mem., vol. 25, no. 2, pp. 93-114, 1 pl., 1905.

Spurr (Josiah Edward).

1. Origin and structure of the Basin ranges.

   Geol. Soc. Am., Bull., vol. 12, pp. 217-270, 6 pls., 1901. Abstract: Science, new ser., vol. 13, p. 98, 1901.

   Describes the structural features of the ranges in the Great Basin region and discusses their origin.

2. Variations of texture in certain Tertiary igneous rocks of the Great Basin.

   Jour. Geol., vol. 9, pp. 586-606, 1 fig., 1901.

   Describes the character and occurrence of the variations of certain andesitic and rhyolitic rocks and gives chemical analyses.

3. The ore deposits of Monte Cristo, Washington.

   U. S. Geol. Surv., 22d Ann. Rept., pt. 2, pp. 777-865, 4 pls., 42 figs., 1901. Abstract: Eng. & Mg. Jour., vol. 74, pp. 240-241, 4 figs., 1902.

   Describes petrology, general geologic relations and structure of the area, and character, occurrence and origin of the ores.

4. Application of geology to mining.

   Mg. & Sci. Press., vol. 85, pp. 145-146, 1902.

   Discusses relations of geology and mining.

5. The original source of the Lake Superior iron ores.

   Am. Geol., vol. 29, pp. 335-349, 1902.

   Describes the origin of these ores as being derived from a sedimentary rock containing large quantities of glauconite.

6. Descriptive geology of Nevada south of the Fortieth Parallel and adjacent portions of California.

   U. S. Geol., Surv., Bull. no. 208, 229 pp., 8 pls., 25 figs., 1903.

   Describes physiographic features, character and occurrence of sedimentary and igneous rocks and ore deposits and structure of the region, including résumé of previous publications and unpublished data furnished by C. D. Walcott, H. W. Turner, F. B. Weeks, R. B. Rowe, G. H. Girty, and E. O. Ulrich.

7. The determination of the feldspars in thin section.

   Am. Geol., vol. 31, pp. 376-383, 1903.

8. Ore deposits of Tonopah and neighboring districts, Nevada.

   U. S. Geol. Surv., Bull. no. 213, pp. 81-87, 1903.

   Describes the history of the development of the field, the topography, general geology, and character and occurrence of the ore deposits.

Spurr (Josiah Edward)—Continued.

9. The ore deposits of Tonopah, Nevada (preliminary report).
U. S. Geol. Surv., Bull. no. 219, 34 pp., 1 pl., 4 figs., 1903.
Gives a brief history of the discovery and development of this mining district, and describes the geologic structure and history of the region, the periods and nature of mineralization, and the occurrence of the ores and their relation to the geologic structure.

10. Relation of rock segregation to ore deposition.
Eng. & Mg. Jour., vol. 76, pp. 54-55. 1903.
Discusses the origin of ore deposits.

11. The ore deposits of Tonopah, Nevada.
Eng. & Mg. Jour., vol. 76, pp. 769-770, illus., 1903.
Describes the geologic structure of the region and the occurrence of the ore deposits of precious metals. .

12. A consideration of igneous rocks and their segregation or differentiation as related to the occurrence of ores.
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 288-340, 1903.
Discusses the relations of igneous rocks and ore deposits, and the origin of the latter.

13. [In discussion of paper by Waldemar Lindgren, "The geological features of the gold production of North America."]
Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1081-1083, 1903.
Discusses the age of certain gold deposits in Alaska.

14. The application of geology to mining.
Intern. Mg. Cong., Proc. 5th sess., pp. 80-86 [1903].

15. [Genetic classification of ore deposits.]
Abstract: Science, new ser., vol. 17, p. 274, 1903.

16. The relation of faults to topography.
Abstract: Science, new ser., vol. 17, p. 792, 1903.

17. Preliminary report on the ore deposits of Tonopah, Nevada.
U. S. Geol. Surv., Bull. no. 225, pp. 89-110, 1 pl. (geol. map), 4 figs., 1904.
See no. 9 above.

18. Ore deposits of Silver Peak quadrangle, Nevada.
U. S. Geol. Surv., Bull. no. 225, pp. 111-117, 1904.
Describes the general geology and the character and occurrence of the gold and silver ore deposits and the mining operations.

19. Notes on the geology of the Goldfields district, Nevada.
U. S. Geol. Surv., Bull. no. 225, pp. 118-119, 1904.
Describes the general geology and the occurrence of gold-bearing quartz veins.

20. Coal deposits between Silver Peak and Candelaria, Esmeralda County, Nev.
U. S. Geol. Surv., Bull. no. 225, pp. 289-292, 1904.
Describes the general geology of the region, the character and occurrence of the coal, and the outlook for development.

21. Alum deposit near Silver Peak, Esmeralda County, Nev.
U. S. Geol. Surv., Bull. no. 225, pp. 501-502, 1904.
Describes location, occurrence, character, and origin of this deposit.

22. The Silver Peak region, Nevada.
Eng. & Mg. Jour., vol. 77, pp. 759-760, 4 figs., 1904.
Describes the character, occurrence, and origin of the gold and silver ore deposits.

23. Geology applied to mining. A concise summary of the chief geological principles, a knowledge of which is necessary to the understanding and proper exploitation of ore deposits for mining men and students.
New York, The Engineering and Mining Journal, 326 pp., 70 figs., 1904.

24. Faulting at Tonopah, Nevada.
Abstract. Science, new ser., vol. 19, pp. 921-922, 1904.

25. The ores of Goldfield, Nev.
U. S. Geol. Surv., Bull. no. 260, pp. 132-139, 2 figs., 1905.
Describes the general geology, and the character and occurrence of the veins and the origin of the gold ores.

Spurr (Josiah Edward)—Continued.

26. Developments at Tonopah, Nev., during 1904.

U. S. Geol. Surv., Bull. no. 260, pp. 140-149, 1905.

Describes recent mining developments in this part of Nevada, and gives data upon the character of the gold ores, and the occurrence, relations, and origin of the veins.

27. Tonopah mining district [Nevada].

Franklin Inst., Jour., vol. 160, pp. 1-20, 11 figs., 1905.

Describes the geology of the region, the systems of faulting, and the occurrence and character of the gold-silver ores.

28. Descriptive geology of Nevada south of the Fortieth Parallel, and adjacent portions of California.

Mg. Rep., vol. 52, pp. 232-233, 1905.

29. Geology of the Tonopah mining district, Nevada.

U. S. Geol. Surv., Professional Paper no. 42, 295 pp., 24 pls., 78 figs., 1905. Abstract: Eng. & Mg. Jour., vol. 80, pp. 922-923, 1905.

Describes the general geology, the geologic structure, the character, occurrence, and relations of igneous rocks, mineral veins, and deposits of gold and silver ores, the origin of the mineral veins, the economic developments, and the physiographic features of the area.

30. Enrichment in fissure veins.

Eng. & Mg. Jour., vol. 80, pp. 597-598, 1905.

Discusses the localization of ore deposits in veins and the reasons therefor.

31. Genetic relations of the western Nevada ores.

Am. Inst. Mg. Engrs., Bi-Mo. Bull., no. 5, pp. 939-969, 1905.

Discusses the general geology, relations, and origin of gold ores of western Nevada.

Spurr (J. E.) and **Garrey** (G. H.).

1. Preliminary report on ore dposits in the Georgetown, Colo., mining district.

U. S. Geol. Surv., Bull. no. 260, pp. 99-120, 4 figs., 1905.

Describes the general geology and petrology, and the character, occurrence, and geological relations of the gold and silver ore deposits.

Standley (P. C.), **Smith** (O. M.) and.

1. The Pierson Creek mines [Missouri].

See **Smith** (O M.) and **Standley** (P. C.), 1.

Stanton (Timothy W.).

1. [Report on Cretaceous fossils from the John Day Basin, Oregon.]

Univ. of Cal., Dept. of Geol., Bull., vol. 2, pp. 280-284, 1901.

Gives lists of fossils with notes on some of the species and discusses the faunal relations.

2. Chondrodonta, a new genus of ostreiform mollusks from the Cretaceous, with descriptions of the genotype and a new species.

U. S. Nat. Mus., Proc., vol. 24, pp. 301-307, 2 pls., 1901.

3. The stratigraphic position of the Judith River beds. A correction of Mr. Hatcher's correction.

Science, new ser., vol. 16, pp. 1031-1032, 1902.

4. A new fresh-water molluscan faunule from the Cretaceous of Montana.

Am. Phil. Soc., Proc., vol. 42, pp. 188-199, 1 pl., 1903.

Discusses the stratigraphic horizon of this faunule, and the occurrence of Cretaceous formations and their correlation, and describes six new species of fresh-water mollusks.

5. Alpheus Hyatt.

Washington Acad. Sci., Proc., vol. 5, pp. 389-391, 1903.

6. Note on the Cretaceous fossils [of the Bisbee quadrangle, Arizona].

U. S. Geol. Surv., Professional Paper no. 21, p. 70, 1 pl., 1904.

Gives a list of species identified and notes on their occurrence. A few of the more characteristic are figured.

7. Stratigraphic notes on Malone Mountain and the surrounding region near Sierra Blanca, Texas.

U. S. Geol. Surv., Bull. no. 266, pp. 23-33, 1905.

Describes the stratigraphy of Cretaceous and Jurassic formations in western Texas.

Stanton (Timothy W.)—Continued.

8. The Morrison formation and its relations with the Comanche series, and the Dakota formation.

Jour. Geol., vol. 13, pp. 657-669, 1905. Abstract: Science, new ser., vol. 22, pp. 755-756, 1905.

Discusses the occurrence and character of the Morrison formation in Colorado and Wyoming, its relations to associated formations, its correlation, and age.

9. The time element in stratigraphy and correlation.

Abstract: Science, new ser., vol. 21, pp. 583-584, 1905.

See also **Schuchert** (C.), assisted by **Dall** (W. H.), **Stanton** (T. W.), and **Bassler** (R. S.), 1.

Stanton (T. W.) and **Hatcher** (J. B.).

1. Geology and paleontology of the Judith River beds.

U. S. Geol. Surv., Bull. no. 257, pp. 1-128, 13 pls., 1905.

Gives an historical review of previous work upon the Judith River beds, and discusses their stratigraphic position, character, relations, and correlations, and gives systematic descriptions of the vertebrates (Hatcher), invertebrates (Stanton), and plants (Knowlton).

Stanton (T. W.) and **Martin** (G. C.)

1. Mesozoic section on Cook Inlet and Alaska Peninsula.

Geol. Soc. Am., Bull., vol. 16, pp. 391-410, 4 pls., 2 figs., 1905.

Describes the general geology, and the occurrence, character, relations, and faunal content of Triassic, Jurassic, and Cretaceous formations.

Starbird (H. B.)

1. Secondary enrichment in arid regions.

Eng. & Mg. Jour., vol. 75, pp. 702-703, 1903.

Describes occurrence and origin of gold and copper ores.

Stead (Geoffrey).

1. Notes on the surface geology of New Brunswick.

New Brunswick Nat. Hist. Soc., Bull. no. 21 (vol. 5, pt. 1), pp. 5-13, 1903.

Describes the process of formation of shore deposits along the coast of New Brunswick.

Stearns (C. H.)

1. Some observations on the topography of Athens and vicinity [Ohio].

Ohio State Acad. Sci., 7th Ann. Rept., pp. 67-70, 1899.

Discusses present and former drainage in the vicinity of Athens, Ohio.

Stearns (Robert E. C.).

1. Fossil land shells of the John Day region, with notes on related living species.

Wash. Acad. Sci., Proc., vol. 2, pp. 651-658, 1 pl., 1900.

2. The fossil fresh-water shells of the Colorado desert, their distribution, environment, and variation.

U. S. Nat. Mus., Proc., vol. 24, pp. 271-299, 6 pls., 1901.

3. Fossil shells of the John Day region [Oregon].

Science, new ser., vol. 15, pp. 153-154, 393, 1902.

Describes two new species.

Steel (A. A.)

1. The ore deposits of La Cananea [Mexico].

Eng. & Mg. Jour., vol. 76, pp. 458-460, illus., 1903.

Gives observations upon the geology and the character and occurrence of the copper-ore deposits.

Steele (James H.)

1. The Joplin zinc district of southwestern Missouri.

Colo. Sch. Mines, Bull., vol. 1, pp. 43-50, illus., 1900.

Gives observations upon the geology and describes the occurrence of the ores and the mining operations.

Steiger (George).

1. Preliminary note on silver chabazite and silver analcite.

Am. Jour. Sci., 4th ser., vol. 14, pp. 31-32, 1902.

Describes experiments undertaken to replace certain silicates by silver.

Steiger (George)—Continued.

2. The action of silver nitrate and thallous nitrate upon certain natural silicates.
U. S. Geol. Surv., Bull. no. 262, pp. 75-90, 1905.

Steiger (George), **Clarke** (Frank Wigglesworth) and.

1. The action of ammonium chloride upon silicates.
See **Clarke** (F. W.) and **Steiger** (George), 1.

2. On "californite."
See **Clarke** (F W.) and **Steiger** (George), 2.

Steiger (George), **Diller** (J. S.) and.

1. Volcanic dust and sand from St. Vincent caught at sea and the Barbados.
See **Diller** (J. S.) and **Steiger** (George), 1.

Sternberg (Charles H.).

1. Experiences with early man in America.
Kans. Acad. Sci., Trans., vol. 18, pp. 89-93, 1903.
Describes association of human relics with fossil bones of animals and discusses evidence as to their age.

2. The Permian life of Texas.
Kans. Acad. Sci., Trans., vol. 18, pp. 94-98, 1903.
Describes the occurrence of fossil remains and physical characters of the Permian Red Beds in Baylor County, Texas.

3. Elephas columbi and other mammals in the swamps of Whitman County, Washington.
Science, new ser., vol. 17, pp. 511-512, 1903.
Describes the occurrence of mammalian remains.

4. Notes on the Judith River group.
Science, new ser., vol. 17, pp. 870-872, 1903.
Discusses the occurrence of vertebrate fossils and the stratigraphic position of the Judith River beds.

5. Protostega gigas and other Cretaceous reptiles and fishes from the Kansas Chalk.
Kans. Acad. Sci., Trans., vol. 19, pp. 123-128, 2 pls., 1905.
Gives notes on the character and occurrence of these fossils.

Sterrett (Douglass B.).

1. Tourmaline from San Diego County, California.
Am. Jour. Sci., 4th ser., vol. 17, pp. 459-465, 1 pl., 12 figs., 1904.
Describes crystallographic features of this mineral.

2. A new type of calcite from the Joplin mining district.
Am. Jour. Sci., 4th ser., vol. 18, pp. 73-76, 8 figs., 1904.
Describes the occurrence and crystallographic characters.

Sterrett (Douglass B.), **Pratt** (Joseph Hyde) and.

1. The tin deposits of the Carolinas.
See **Pratt** (J. H.) and **Sterrett** (D. B.), 1.

Stevens (Blamey).

1. Geology of some copper deposits in Alaska.
Eng. & Mg. Jour., vol. 75, p. 782, 2 figs., 1903.

2. Relation of rock segregation to ore deposition.
Eng. & Mg. Jour., vol. 76, p. 574, 1903.

3. On the differentiation of igneous magmas and formation of ores.
Eng. & Mg. Jour., vol. 77, pp. 71-72, 1904.

4. Acidic magmas, their exhalations and residues.
Eng. & Mg. Jour., vol. 77, p. 351, 1904.

Stevens (E. A.).

1. An occurrence of limburgite in the Cripple Creek district [Colorado].
Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 759-764, 4 figs., 1901.
Describes the occurrence and character of this rock type.

Stevens (E. A.)—Continued.

2. Basaltic zones as guides to ore deposits in the Cripple Creek district, Colorado.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 686–698, 4 figs., 1903.

Describes the character and occurrence of igneous rocks and the relations of the dikes, fissures, and ore deposits.

Stevens (Horace J.).

1. General information of the geology and mines of the Lake Superior copper district.

Am. Inst. Mg. Engrs., Bi-mo. Bull. no. 1, pp. 208–222, 1 fig., 1905.

Includes an account of the geology of the region.

Stevenson (John J.).

1. Notes upon the Mauch Chunk of Pennsylvania.

Am. Geol., vol. 29, pp. 242–249, 1902.

Discusses the nomenclature of a portion of the Carboniferous, presents a section in Pennsylvania, giving a list of fossils from the various horizons determined by Weller, and discusses the correlation of the formations.

2. The Lower Carboniferous of the Appalachian Basin.

Abstract: Science, new ser., vol. 16, pp. 259–260, 1902.

3. Joseph Le Conte (obituary).

Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 150–151, 1902.

4. Lower Carboniferous of the Appalachian Basin.

Geol. Soc. Am., Bull., vol. 14, pp. 15–96, 1903.

Describes occurrence, stratigraphy, lithologic characters, and geologic relations of Lower Carboniferous formations in the Appalachian region and discusses their nomenclature and correlation, and the physiographic conditions prevailing during their deposition.

5. J. Peter Lesley.

Science, new ser., vol. 18, pp. 1–3, 1903.

6. Carboniferous of the Appalachian Basin.

Geol. Soc. Am., Bull., vol. 15, pp. 37–210, 1904.

Describes in detail the distribution, character, and geologic relations of the various beds of the Pottsville of the Pennsylvanian series in the Appalachian region, giving numerous detailed sections, and discusses their nomenclature and correlation.

7. Memoir of J. Peter Lesley.

Geol. Soc. Am., Bull., vol. 15, pp. 532–541, 1 pl. (por.), 1904.

Includes a list of his published writings.

Stevenson (Robert).

1. The deposition of ores from an igneous magma.

Eng. & Mg. Jour., vol. 76, p. 882, 1903.

2. The deposition of ores from an igneous magma.

Eng. & Mg. Jour., vol. 77, pp. 272–273, 1904.

3. The deposition of ores from an igneous magma.

Eng. & Mg. Jour., vol. 77, pp. 472–474, 4 figs., 1904.

Illustrates the formation of an igneous magma by an example based upon geologic structure in Alaska.

Stewart (Alban).

1. Teleosts of the upper Cretaceous.

Kans. Univ. Geol. Surv., vol. 6, pp. 257–390, 41 pls., 1900.

Stewart (John L.).

1. Ore deposits and industrial supremacy.

Econ. Geol., vol. 1, pp. 257–264, 1905.

Stoek (H. H.).

1. The Pennsylvania anthracite coal field.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 55–117, 5 pls., 12 figs., 1902.

Describes the extent, subdivisions, general geologic relations, and structure of the Pennsylvania anthracite coal field, the number and extent of workable beds, the character, composition, production, and marketing of the coal.

Stoess (P. C.).

1. The Kayak coal and oil fields of Alaska.

Mg. & Sci. Press, vol. 87, p. 65, 1903.
Describes the general geology of the region and the occurrence of coal and petroleum.

Stokes (H. N.).

1. On pyrite and marcasite.

U. S. Geol. Surv., Bull. no. 186, pp. 1-50, 1 pl., 2 figs., 1901; Am. Jour. Sci., 4th ser., vol. 12, pp. 414-420, 1901.
Describes the uncertainty of the methods of distinguishing pyrite and marcasite and a method for the quantitative determination of the minerals when in mixture, and discusses the relations of these sulphides to those of copper.

Stokes (H. N.), **Merrill** (George P.) and.

1. A new stony meteorite from Allegan, Michigan, and a new iron meteorite from Mart, Texas.

See **Merrill** (George P.) and **Stokes** (H. N.), 1.

Stone (George H.).

1. Note on the minerals associated with copper in parts of Arizona and New Mexico.

Abstract: Science, new ser., vol. 14, pp. 796-797, 1901. Sci. Am. Suppl., vol. 52, p. 21505, 1901.

2. Note on the extinct glaciers of New Mexico and Arizona.

Abstract: Science, new ser., vol. 14, p. 798, 1901.
Brief account of occurrence.

3. [Discovery of coal on Turkey Creek, Colorado.]

Am. Geol., vol. 32, p. 132, 1903.

Stone (Ralph W.).

1. The Elders Ridge coal field, Pennsylvania.

U. S. Geol. Surv., Bull. no. 225, pp. 311-324, 1904.
Describes location and geologic structure of the field and the occurrence and character of the coals.

2. Oil and gas fields of eastern Greene County, Pa.

U. S. Geol. Surv., Bull. no. 225, pp. 396-412, 1 fig., 1904.
Describes the location and general geology of the field, the stratigraphic position and character of the oil and gas producing strata, the geologic structure of the region, and the production of oil and gas.

3. Water resources of the Elders Ridge quadrangle, Pennsylvania.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 164-165, 1905.

4. Water resources of the Waynesburg quadrangle, Pennsylvania.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 166-167, 1905.

5. Coal resources of southwestern Alaska.

U. S. Geol. Surv., Bull. no. 259, pp. 151-171, 1905.
Describes briefly the general geology and the various occurrences of coal beds and the character of the coals.

6. Waynesburg folio, Pennsylvania.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 121, 1905.
Describes the physiography, geologic structure, the occurrence, character, and relations of Carboniferous strata and Pleistocene deposits, the geologic history, and the mineral resources, chiefly coal, natural gas, and oil.

7. Elders Ridge folio, Pennsylvania.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 123, 1905.
Describes the physiographic features, the occurrence, character, and relations of Carboniferous formations, the geologic structure, the geologic history, and the mineral resources, chiefly coal and natural gas.

8. Mineral resources of the Elders Ridge quadrangle, Pennsylvania.

U. S. Geol. Surv., Bull. no. 256, 86 pp., 12 pls., 4 figs., 1905.
Describes the geologic structure, the occurrence, character, and relations of Carboniferous strata, and the mineral resources, principally coal and natural gas.

Stoneham (W. J.).

1. Nevada coal field.

Eng. & Mg. Jour., vol. 77, pp. 1009–1010, 1904.

Describes location and general geology of the field and the occurrence and character of the coal.

Storms (W. H.).

1. Some structural features of the California gold belt.

Mg. & Sci. Press, vol. 87, pp. 112, 129, 149, 165, 183, 202, 216–217, illus., 1903.

Describes the character and occurrence of the lodes and veins yielding gold ore.

2. The genesis and character of ore deposits.

Mg. & Sci. Press, vol. 88, pp. 193–194, 1904.

3. The Mother Lode in Tuolumne County, California.

Mg. & Sci. Press, vol. 89, pp. 189, 210–211, 237, 257, 271–272, 306–307, 326–327, 343, 21 figs., 1904.

Describes the geologic relations, occurrence, and character of the Mother Lode, the occurrence of the gold-ore bodies, and the mining operations.

4. Ancient gravel channels of Calaveras County, California.

Mg. & Sci. Press, vol. 91, pp. 170–171, 192–193, 4 figs., 1905.

5. The Golden West mine, Pennington County, South Dakota.

Mg. & Sci. Press, vol. 91, p. 257, 1 fig., 1905.

Describes the occurrence and relations of gold-bearing deposits.

Storrs (Arthur H.).

1. The anthracite coal fields of Pennsylvania.

Mg. Mag., vol. 11, pp. 211–221, 13 figs., 1905.

Storrs (L. S.).

1. The Rocky Mountain coal fields.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 415–471, 2 pls., 1 fig., 1902.

Describes location, extent, geologic relations and development of coal areas in the Rocky Mountains region, the occurrence, thickness, and extent of coal beds, and the character, composition, and utilization of the coal and lignite.

Stose (George W.).

1. The structure of a part of South Mountain, Pennsylvania.

Abstract: Science, new ser., vol. 17, p. 387, 1903.

2. Barite in southern Pennsylvania and pure limestone in Berkeley County, W. Va.

U. S. Geol. Surv., Bull. no. 225, pp. 515–517, 1904.

Describes the stratigraphy and geologic structure of the Cumberland Valley and the occurrence of barite in this region; describes also the occurrence and quarrying of limestone at Martinsburg, W. Va.

3. Physiographic studies in southern Pennsylvania.

Jour. Geol., vol. 12, pp. 473–484, 3 figs., 1904.

Describes physiographic features in the Chambersburg and Mercersburg quadrangles and their origin, including the peneplains and their age.

4. Water resources of the Chambersburg and Mercersburg quadrangles, Pennsylvania.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 156–158, 1905.

Stose (George W.) and **Martin** (George C.).

1. Water resources of the Pawpaw and Hancock quadrangles, West Virginia, Maryland, and Pennsylvania.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 58–63, 1905.

Stretch (R. H.).

1. The Silverton mining district, Snohomish County, Washington.

Eng. and Mg. Jour., vol. 72, p. 105, 1901.

Describes briefly the occurrence of copper ores.

2. The Independent mine at Silverton, Snohomish County, Washington.

Eng. & Mg. Jour., vol. 73, p. 832, 1902.

Briefly describes the vein system and occurrence of gold ores.

Stretch (R. H.)—Continued.

3. The Montezuma district, Nevada.

Eng. & Mg. Jour., vol. 78, pp. 5-6, 1904.
Describes the general geology and the occurrence of silver-lead ore deposits.

4. Copper ores in the Cascade Mountains.

Eng. & Mg. Jour., vol. 78, pp. 789-790, 3 figs., 1904.
Describes the occurrence, character, and geologic relations of copper-ore deposits in the State of Washington.

Strong (A. M.), **Arnold** (Ralph), and.

1. Some crystalline rocks of the San Gabriel Mountains, California.

See **Arnold** (Ralph) and **Strong** (A. M.), 1.

Struthers (Joseph) and **Pratt** (Joseph Hyde).

1. Tin.

U. S. Geol. Surv., Min. Res. of U. S. for 1903, pp. 335-349, 1904.
Includes an account of the occurrence, character, and geologic relations of the rocks in which the tin ores of North Carolina and South Carolina occur, and of the mineralogical and chemical character of the ores.

Stubbs (Wm. C.).

1. Report on the agricultural resources and capabilities of Hawaii.

U. S. Dept. Agric., Office of Exper. Stations, Bull. no. 95, 100 pp., 27 pls., 1901.
Includes a brief account of the geology of Hawaii.

Stübel (Alphons).

1. Martinique und St. Vincent. Eine Studie zur wissenschaftlicher Beurteilung der Ausbrüche auf den kleinen Antillen, 1902.

Leipzig, Max Weg, 1903. 36 pp., 6 figs., 4to.

2. Rückblick auf die Ausbruchsperiode des Mont Pelé auf Martinique 1902-1903 vom theoretischen Gesichtspunkte aus.

Leipzig, Max Weg, 1904. 24 pp., 20 figs., 4to. (Not seen.)

Stupart (R. F.).

1. Seismology in Canada.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 9, sect. 3, pp. 69-71, 1903.
Describes briefly earthquake observations by seismographs in Toronto and Victoria, Canada.

Sullivan (Eugene C.).

1. The chemistry of ore-deposition—precipitation of copper by natural silicates.

Econ. Geol., vol. 1, pp. 67-73, 1905.

Sutton (W. J.).

1. The geology and mining of Vancouver Island.

Manchester Geol. & Mg. Soc., Trans., vol. 28, pp. 307-314, 1904.
Describes the general geology and the occurrence and economic development of coal and copper-ore deposits.

T.

Taff (Joseph A.).

1. A comparison of the Ouachita and Arbuckle Mountain sections, Indian Territory.

Abstract: Science, new ser., vol. 13, pp. 271-272, 1901.
Briefly describes sections of Paleozoic rocks.

2. Colgate folio, Indian Territory.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 74, 1901.
Describes the geographic and topographic features, the general geologic relations, the character and occurrence of the Carboniferous, Neocene, and Pleistocene strata, and the occurrence of coal.

3. Atoka folio, Indian Territory.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 79, 1902.
Describes geographic and topographic features, the geologic structure, character and occurrence of pre-Cambrian, Cambrian, Cambro-Silurian, Silurian, Devonian, Carboniferous, and Cretaceous strata, and the mineral resources, chiefly coal, granite, and building stones.

Taff (Joseph A.)—Continued.

4. The southwestern coal field.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 367–413, 4 pls., 2 figs., 1902.

Describes location, extent, stratigraphy, and geologic structure of this coal field, occupying parts of Arkansas, Texas, and Indian Territory, the number and extent of workable beds, the character, composition, and production of the coal.

5. Chalk of southwestern Arkansas, with notes on its adaptability to the manufacture of hydraulic cements.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 687–742, 7 pls., 13 figs., 1902.

Describes location, geologic age, and occurrence of the chalk and chalk marl deposits of southwestern Arkansas, the geologic history of the region, character, composition, adaptability, and utilization of the chalk, chalk-marls, and clays of Arkansas in the manufacture of Portland cement.

6. Tishomingo folio, Indian Territory.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 98, 1903.

Describes geography, physiography, general relations, pre-Cambrian igneous rocks, Cambrian, Ordovician, Siluro-Devonian, Carboniferous, and Cretaceous sedimentary rocks and Quaternary deposits, geologic structure of the Arbuckle Mountain region, and the mineral resources.

7. Maps of segregated coal lands in the McAlester district, Choctaw Nation, Indian Territory, with descriptions of the unleased segregated coal lands.

U. S., Dept. Interior, Circular no. 1, 59 pp., 2 maps, 1904.

Describes the character and occurrence of the coal beds and the quality of the coal.

8. Maps of segregated coal lands in the Wilburton-Stigler district, Choctaw Nation, Indian Territory, with descriptions of the unleased segregated coal lands.

U. S., Dept. Interior, Circular no. 2, 47 pp., 2 maps, 1904.

Describes the occurrence and character of the coal beds and quality of the coal.

9. Maps of segregated coal lands in the Howe-Poteau district, Choctaw Nation, Indian Territory, with description of the unleased segregated coal lands.

U. S., Dept. Interior, Circular no. 3, 48 pp., 2 maps, 1904.

Describes the occurrence and character of coal beds and quality of the coal.

10. Maps of segregated coal lands in the McCurtain-Massey district, Choctaw Nation, Indian Territory, with description of the unleased segregated coal lands.

U. S., Dept. Interior, Circular no. 4, 54 pp., 1904.

Describes the occurrence and character of the coal beds and the quality of the coal.

11. Maps of segregated coal lands in the Lehigh-Ardmore districts, Choctaw and Chickasaw nations, Indian Territory, with descriptions of the unleased segregated coal lands.

U. S., Dept. Interior, Circular no. 5, 39 pp., 2 maps, 1904.

Describes the occurrence and character of the coal beds and the quality of the coal.

12. Description of the unleased segregated asphalt lands in the Chickasaw Nation, Indian Territory.

U. S., Dept. Interior, Circular no. 6, 14 pp., 1904.

Describes the occurrence and character of asphalt deposits.

13. Preliminary report on the geology of the Arbuckle and Wichita mountains in Indian Territory and Oklahoma.

U. S. Geol. Surv., Professional Paper no. 31, pp. 11-81, 8 pls., 1 fig., 1904.

Describes the physiographic features and history of the region, the occurrence, character, and relations of pre-Cambrian igneous rocks, and Cambrian, Ordovician, Silurian, Devonian, Carboniferous, and Cretaceous sedimentary rocks, and the geologic structure of the Arbuckle and Wichita mountains.

14. Portland-cement resources of Indian Territory.

U. S. Geol. Surv., Bull. no. 243, pp., 145–147, 1905.

Describes the occurrence of limestones suitable for cement manufacture.

15. Portland-cement resources of Texas.

U. S. Geol. Surv., Bull. no. 243, pp. 307–310, 1 pl., 1905.

Describes the occurrence, geologic relations, and character of limestones in Texas suitable for Portland-cement manufacture.

Taff (Joseph A.)—Continued.

16. Progress of coal work in Indian Territory.

U. S. Geol. Surv., Bull. no. 260, pp. 382-401, 2 pls., 1905.

Describes the location, extent, and stratigraphy of the coal fields, the character and extent of the coal beds, and the mining developments.

17. Tahlequah folio, Indian Territory-Arkansas.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 122, 1905.

Describes the physiographic relations and features, the character, occurrence, and relations of Ordovician, Silurian, Devonian, and Carboniferous formations, the history of the sedimentation, the geologic structure, and the economic resources.

18. Some erratic boulders in middle Carboniferous shale in Indian Territory.

Abstract: Science, new ser., vol. 21, p. 225, 1905.

Taff (Joseph A.) and **Shaler** (Millard K.).

1. Notes on the geology of the Muscogee oil fields, Indian Territory.

U. S. Geol. Surv., Bull. no. 260, pp. 441-445, 1 fig., 1905.

Describes the location and opening of the field, and the character and occurrence of the oil, and discusses the strata penetrated in the wells.

Taft (H. H.).

1. Notes on southern Nevada and Inyo County, California.

Am. Inst. Mg. Engrs., Bi-Mo. Bull., no. 6, pp. 1279-1298, 1905.

Includes notes on the geology of the region.

Talbot (Mignon).

1. A contribution to the list of the fauna of the Stafford limestone of New York.

Am. Jour. Sci., 4th ser., vol. 16, pp. 148-150, 1903.

2. Revision of the New York Helderbergian crinoids.

Am. Jour. Sci., 4th ser., vol. 20, pp. 17-34, 4 pls., 4 figs., 1905.

Tallmon (Marion Clover), **Morgan** (William Conger), and.

1. A fossil egg from Arizona.

See **Morgan** (W. C.) and **Tallmon** (M. C.), 1.

2. A peculiar occurrence of bitumen and evidence as to its origin.

See **Morgan** (W. C.) and **Tallmon** (M. C.), 2.

Talmage (J. E.).

1. A recent fault slip, Ogden Canyon, Utah

Science, new ser., vol. 13, p. 550, 1901.

Gives a brief account of the phenomena.

2. The geology of Utah.

Int. Mg. Cong., 4th session, Proc., pp. 42-48, 1901.

Describes some of the geologic features of the State.

Tarr (Ralph S.).

1. Syllabus for field and laboratory work in dynamic, structural, and physiographic geology (Geology 1) at Cornell University.

Ithaca, New York, 152 pp., 1902.

Contains directions for field and laboratory work in geology and elementary mineralogy and petrology.

2. The physical geography of New York State.

The MacMillan company, New York, 1902. 397 pp., 210 figs.

Describes the general physiographic and drainage features and geologic development, the plains and plateaus, and the influence of the Glacial period upon the topography and drainage systems of the State, and the physiographic and glacial geology of the Great Lakes region.

3. Post-Glacial and Inter-Glacial (?) changes of level at Cape Ann, Massachusetts.

Harvard Coll. Mus. Comp. Zool., Bull., vol. 42, pp. 181-191, 13 pls., 1903.

Describes physiographic features and discusses evidences of changes of level.

4. New physical geography.

New York, The Macmillan Company, 1904. xiii, 457 pp., 568 figs.

Tarr (Ralph S.)—Continued.

5. Artesian well sections at Ithaca, N. Y.
   Jour. Geol., vol. 12, pp. 69–82, 4 figs., 1904.
   Gives records of well borings, describes the materials (glacial deposits) passed through, and discusses the geologic history of the Ithaca delta.

6. Hanging valleys in the Finger Lake region of central New York.
   Am. Geol., vol. 33, pp. 271–291, 5 pls., 19 figs., 1904.
   Describes various physiographic features bearing on the question of the origin of these valleys.

7. Moraines of Seneca and Cayuga Lakes.
   Am. Geol., vol. 35, p. 129, 1905.
   A brief note regarding the occurrence of moraines.

8. Water resources of the Watkins Glen quadrangle, New York.
   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 134–140, 1905.

9. Some instances of moderate glacial erosion.
   Jour. Geol., vol. 13, pp. 160–173, 9 figs., 1905.

10. Moraines of the Seneca and Cayuga Lake valleys.
    Geol. Soc. Am., Bull., vol. 16, pp. 215–228, 1 pl., 1905.
    Describes the position and character of the moraines in this region and discusses their relations and mode of formation.

11. Drainage features of central New York.
    Geol. Soc. Am., Bull., vol. 16, pp. 229–242, 6 pls., 1905.
    Discusses various peculiarities of drainage in this region and the hypotheses which have been advanced in explanation thereof.

12. The gorges and waterfalls of central New York.
    Am. Geog. Soc., Bull., vol. 37, pp. 193–212, 11 figs., 1905.

13. Gorges and waterfalls of central New York.
    Abstract: Intern. Geog. Cong., Eighth, Rept., p. 136, 1905.

14. Some drainage features of southern central New York.
    Abstract: Am. Geol., vol. 35, p. 52, 1905.

Tarr (Ralph S.) and **Martin** (Lawrence).

1. Recent change of level in Alaska.
   Science, new ser., vol. 22, pp. 879–880, 1905.

Tassin (Wirt).

1. Descriptive catalogue of the collection of gems in the U. S. National Museum.
   U. S. Nat. Mus., Ann. Rept. for 1900, pp. 473–670, 9 pls., 26 figs., 1902.

2. Descriptive catalogue of the meteorite collection in the U. S. National Museum to January 1, 1902.
   U. S. Nat. Mus., Ann. Rept. for 1900, pp. 671–698, 4 pls., 1902.

3. The Casas Grandes meteorite.
   U. S. Nat. Mus., Proc., vol. 25, pp. 69–74, 4 pls., 1902.
   Describes occurrence and composition of a meteorite from Casas Grandes, Mexico.

4. The Persimmon Creek meteorite [North Carolina].
   U. S. Nat. Mus., Proc., vol. 27, pp. 955–959, 2 pls., 1 fig., 1904.
   Describes occurrence, characters, and composition.

5. The Mount Vernon meteorite.
   U. S. Nat. Mus., Proc., vol. 28, pp. 213–217, 2 pls. and 1 fig., 1905.
   Describes occurrence, general structure, and composition, and mineralogical composition of a meteorite found near Mount Vernon, Kentucky.

Taylor (Frank Bursley).

1. Glacial phenomena in eastern Ontario.
   Abstract: Science, new ser., vol. 13, p. 138, 1901.

Taylor (Frank Bursley)—Continued.

2. Surface geology of Lapeer County, Michigan; summary report of progress.

   Mich. Geol. Surv., Ann. Rept. for 1901, pp. 111-117, 1 pl., 1902.

   Describes the drift covering of the county and gives a sketch of the Glacial history of the region.

3. The correlation and reconstruction of recessional ice borders in Berkshire County, Massachusetts.

   Jour. Geol., vol. 11, pp. 323-364, 10 figs., 1903.

   Describes topographic and drainage features and moraines, and discusses the evidences as to the movements of the ice sheet and general relations of the ice front to the land relief.

4. Studies in the glaciation of the Berkshire Hills, Massachusetts.

   Abstract: Science, new ser., vol. 17, p. 225, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

5. Water resources of the Taconic quadrangle, New York, Massachusetts, Vermont.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 130-133, 1905.

Taylor (L. H.).

1. Water storage in the Truckee Basin, California-Nevada.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 68, 90 pp. 8 pls., 20 figs., 1902.

Tays (E. A. H.).

1. Genesis of ore deposits.

   Mg. & Sci. Press, vol. 83, pp. 142-143, 3 figs., 1901.

   Discusses article by M. W. Alderson on the same subject.

Teall (J. J. H.).

1. Volcanic dust from the West Indies.

   Nature, vol. 66, p. 130, 1902.

   Notes on chemical analysis of the dust.

Teggart (Frederick J.).

1. Literature available in the [Mechanics' Institute] Library [San Francisco, California] on petroleum with some references on asphaltum.

   Mechanics' Inst. Lib., San Francisco, Cal., Tech. Ref. List no. 1, 24 pp., 1903.

Teller (Edgar E.).

1. The Hamilton formation at Milwaukee, Wisconsin.

   Wis. Nat. Hist. Soc., Bull., new ser., vol. 1, pp. 47-56, 1 pl., 1900.

   Reviews previous descriptions, describes the characters and succession of the strata, and gives notes on the occurrence of characteristic fossils.

Thelen (Paul).

1. The differential thermal conductivities of certain schists.

   Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 201-226, 2 pls., 10 figs., 1905.

   Describes methods of experimentation and experiments made to determine the thermal conductivity of certain schists, the results obtained, and the petrographic characters of the schists employed.

Thelen (P.), **Knopf** (A.) and.

1. Sketch of the geology of Mineral King, California.

   See **Knopf** (A.) and **Thelen** (P.), 1.

Thiele (F. C.).

1. Ueber Texas-petroleum.

   Chemiker-Zeitung, Cöthen, vol. 25, pp. 175-176, 1901.

   Discusses character and composition of oil from Texas.

Thierry (—).

1. Sur l'éruption volcanique du 8 mai à la Martinique.

   Acad. des Sci. (Paris), Compt. rend., vol. 135, pp. 71-72, 1902.

   Describes phenomena witnessed during an eruption of Mont Pelé.

Thomae (W. F. A.).

1. An ore formation on Prince of Wales Island (S. E. Alaska).

   Inst. Mg. & Metal., Trans., vol. 10, pp. 44-48, 1902.

   Describes the occurrence and discusses the origin of ore deposits upon this island.

Thomas (Kirby).

1. Mining developments in eastern Ontario.

   Eng. & Mg. Jour., vol. 74, pp. 186-187, 1902.

2. Glacial gold in Wisconsin.

   Eng. & Mg. Jour., vol. 74, p. 248, 1902.

3. Methods of mining in the Vermilion iron district of Minnesota.

   Mg. & Sci. Press, vol. 88, pp. 133-134, 5 figs., 1904.
   Describes the occurrence, character, and methods of mining the iron ores.

4. Notes on the geology of a new iron district in Minnesota.

   Mines & Minerals, vol. 25, p. 27, 1904.
   Discusses the occurrence of iron-bearing formations.

Thyng (William S.), **Lyon** (D. A.), and **Roberts** (Milnor), **Landes** (Henry).

1. The metalliferous resources of Washington, except iron.

   See **Landes** (H.), **Thyng** (W. S.), **Lyon** (D. A.), and **Roberts** (M.), 1.

Tight (W. G.).

1. Lake Licking—a contribution to the buried drainage of Ohio.

   Ohio State Acad. Sci., 2d Ann. Rept., pp., 17-20 [1894].

2. Drainage modifications in Washington and adjacent counties [Ohio].

   Ohio State Acad. Sci., Special Papers no. 3, pp. 11-31, 5 pls., 1900.
   Describes present drainage system and topographic features of this area and their bearing upon pre-Glacial drainage.

3. Pre-Glacial drainage in southwestern Ohio.

   Science, new ser., vol. 14, pp. 775-776, 1901.
   Discusses recent article by A. M. Miller on the same subject.

4. Drainage modifications in southeastern Ohio and adjacent parts of West Virginia and Kentucky.

   U. S. Geol. Surv., Professional Paper no. 13, 111 pp., 17 pls., 1 fig., 1903.
   Discusses the present drainage of the region under consideration, the pre-Glacial drainage of adjacent regions, the general topographic features and their relation to the Tertiary peneplain, the characters of the present river valleys, the reconstruction of the old drainage system, relations of present and former drainage systems to one another and to the geologic structure, and the geologic events which caused the drainage changes.

5. Clarence Luther Herrick.

   Am. Geol., vol. 36, pp. 1-26, 1 pl. (por.), 1905.
   Includes a list of his published writings.

6. Bolson plains of the Southwest.

   Am. Geol., vol. 36, pp. 271-284, 1905.
   Discusses the definition of bolson plains and its application to the intermontane valleys of New Mexico.

Tippenhauer (L. Gentil).

1. Beiträge zur Geologie Haitis.

   Petermanns Mitteilungen, Bd. 45, pp. 25-29, 153-155, 201-204, 3 pls. (maps), 2 figs., 1899.
   Describes the geology of portions of the island of Hayti.

2. Beiträge zur Geologie Haitis.

   Petermanns Mitteilungen, Bd. 47, pp. 121-127, 169-178, 193-199, 5 pls. (maps), 5 figs., 1901.
   Describes the general geology of portions of the island of Hayti, and the occurrence and character of deposits of iron and copper ores and lignite.

Titcomb (H. A.).

1. The Camp Bird gold mine and mills [Colorado].

   School of Mines Quart., vol. 24, pp. 56-67, 7 figs., 1902.
   Gives a general account of the geology and the occurrence of the gold ore deposits and of the mining operations.

Todd (James E.).

1. River action phenomena.

   Geol. Soc. Am., Bull., vol. 12, pp. 486-490, 1901.
   Discusses the variations in phenomena of river action in time of flood and the formation of silt and loess deposits.

Todd (James E.)—Continued.

2. Some problems of the Dakota artesian system.

Abstract: Science, new ser., vol. 14, p. 794, 1901; Sci. Am. Suppl., vol. 52, p. 21504, 1901.

3. Moraines and maximum diurnal temperature.

Abstracts: Science, new ser., vol. 14, pp. 794–795, 1901; Sci. Am. Suppl., vol. 52, p. 21504, 1901.
Describes certain glacial phenomena.

4. Hydrographic history of South Dakota.

Geol. Soc. Am., Bull., vol. 13, pp. 27–40, 1 pl. (map), 3 figs., 1902.
Discusses the earth movements that have affected the drainage features of the State.

5. Mineral building material, fuels and waters of South Dakota, with production for 1900.

S. Dak. Geol. Surv., Bull. no. 3, pp. 81–130, 10 pls., 1902: Stone, vol. 25, pp. 413–418, 521–524, 1903.
Describes the character and distribution of the building stones, cements, clays, fuels, and mineral waters in the State.

6. Concretions and their geological effects.

Geol. Soc. Am., Bull., vol. 14, pp. 353–368, 5 pls., 1903.
Discusses character, occurrence, and modes of growth of concretions and their influence in producing topographic forms.

7. Building stones of South Dakota.

Stone, vol. 26, pp. 20–27, illus., 1903.
Describes the character and geologic occurrence of building stones.

8. A newly discovered rock at Sioux Falls, South Dakota.

Stone, vol. 27, pp. 46–48, 1903.
Describes the occurrence and character of an igneous rock discovered in this vicinity.

9. Olivet folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 96, 1903.
Describes geography and topography, general geology, character, and occurrence of Algonkian, Cretaceous, and Quaternary deposits, geologic history, economic and water resources.

10. Parker folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 97, 1903.
Describes geography, general geology, and character and occurrence of Algonkian and Cretaceous strata and Quaternary deposits, the geologic history and economic resources, including underground waters.

11. Mitchell folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 99, 1903.
Describes geography, general geology, the character and occurrence of deposits belonging to the Algonkian, Cretaceous, and Quaternary systems, the geologic history and economic resources, more particularly the underground waters.

12. The newly discovered rock at Sioux Falls, South Dakota.

Am. Geol., vol. 33, pp. 35–39, 1904.
Describes occurrence and characters of a diabasic rock discovered at Sioux Falls.

13. Benton formation in eastern South Dakota.

Geol. Soc. Am., Bull., vol. 15, pp. 569–575, 1 fig., 1904.
Describes the character and occurrence of the Benton formation and its subdivisions in South Dakota, and corrects the former erroneous interpretation of the Greenhorn chalky limestone.

14. Geology of South Dakota.

Black Hills, South Dakota. Papers read before the Black Hills Mining Men's Assoc., pp. 128–135, 1904. Am. Mg. Cong., 6th Ann. Sess., Rept. of Proc., pp. 51–57, 1905. Abstract: Mg. Rep., vol. 50, pp. 615–616, 1904.
Gives a general account of the geology of the State of South Dakota.

15. Huron folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 113, 1904.
Describes the topography, drainage, and general geology, the character, occurrence, and relations of Cretaceous strata and Quaternary deposits and the geologic history, and discusses the underground water resources of the area.

Todd (James E.) and **Hall** (C. M.).

1. Alexandria folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 100, 1903.

Describes geography, general geology, Algonkian, Cretaceous and Quaternary deposits, the geologic history, and economic and artesian water resources of the Alexandria quadrangle.

2. Geology and water resources of part of the lower James River valley, South Dakota.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 90, 47 pp., 23 pls., 1904.

Describes occurrence and character of Algonkian, Cretaceous, and Quaternary formations, the geologic history of the region, and the water supply, especially from artesian wells, giving records of borings.

3. De Smet folio, South Dakota.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 114, 1904.

Describes the general geology, the character, occurrence, and relations of Cretaceous strata and Quaternary deposits, the geologic history, and the economic resources, and discusses in detail the water resources of the area.

Todd (J. H.).

1. Some observations on the pre-Glacial drainage of Wayne and adjacent counties [Ohio].

Ohio State Acad. Sci., Special Papers no. 3, pp. 47-67, map, 1900.

Tower (Walter S.).

1. The development of cut-off meanders.

Am. Geog. Soc., Bull., vol. 36, pp. 589-599, 3 figs., 1904.

2. Topography and travel in Pennsylvania.

Am. Geog. Soc., Bull., vol. 37, pp. 145-154, 1905.

Describes physiographic features of Pennsylvania.

Transeau (Edgar N.).

1. On the greographic distribution and ecological relations of the bog plant societies of northern North America.

Bot. Gaz., vol. 36, pp. 401-420, 3 figs., 1903.

Includes a discussion of pre-Glacial distribution and Glacial and later migrations of these plant societies.

Treadwell (John C.).

1. The Sahuayacan mining district, Mexico.

Eng. & Mg. Jour., vol. 80, pp. 1213-1216, 6 figs., 1905.

Contains notes on the geology of the region.

True (Frederick W.).

1. Diagnosis of a new genus and species of fossil sea-lion from the Miocene of Oregon.

Smith. Misc. Coll., vol. 48 (Quart. Issue, vol. 3, pt. 1), pp. 47-49, 1905.

2. The first discovery of fossil seals in America.

Science, new ser., vol. 22, p. 794, 1905.

True (H. L.).

1. The cause of the Glacial period: being a résumé and discussion of the current theories to account for the phenomena of the drift, with a new theory by the author.

Cincinnati, The Robert Clarke Company, 1902. xi, 162 pp., illus.

Trumbull (L. W.).

1. A preliminary report upon the coal resources of Wyoming.

Wyo. Univ., School of Mines, Bull., no. 7, 95 pp., 18 pls., 1905.

Includes a general account of the geology of the Cretaceous rocks of Wyoming.

Turnbull (J. M.).

1. Geological sketch of the Bankhead [Alberta] coal field.

Can. Mg. Rev., vol. 23, pp. 213-214, 4 pls., 1 fig., 1904.

Describes the general geology, the occurrence of the coal beds of Cretaceous age, and the character and mining of the coal.

Turner (Henry W.).

1. The geology of the Great Basin in eastern California and southwestern Nevada.

   Abstract: Jour. Geol., vol. 9, p. 73, 1901: Geol. Soc. Am., Bull., vol. 12, p. 498, 1901.
   Describes the structure of the region and its general stratigraphic features.

2. Perknite (lime-magnesia rocks).

   Jour. Geol., vol. 9, pp. 507-511, 1901.
   Describes the character and occurrence of a new rock type and gives chemical analyses of rocks included in this group.

3. The mines of Esmeralda County, Nevada.

   Mg. & Sci. Press, vol. 82, pp. 73-74, 1901.
   Contains notes on the general geology of portions of the county.

4. Notes on unusual minerals from the Pacific States.

   Am. Jour. Sci., 4th ser., vol. 13, pp. 343-346, 1902.
   Describes occurrence and chemical characters of certain mineral phosphates, silicates and sulphates.

5. A sketch of the historical geology of Esmeralda County, Nevada.

   Am. Geol., vol. 29, pp. 261-272, 1902.
   Describes the general characters of the formations from pre-Cambrian time to recent, and discusses the geologic structure of the region.

6. The Greenback copper mine, Kern County, California.

   Eng. & Mg. Jour., vol. 74, pp. 547-548, 1 fig., 1902.

7. Unusual minerals from the Pacific States.

   Mg. & Sci. Press, vol. 84, p. 296, 1902.
   Describes occurrence of pyromorphite, monazite, apatite and vivianite.

8. An instance of variability in a rock magma.

   Abstract: Science, new ser., vol. 15, p. 411, 1902.

9. A post-Tertiary elevation of the Sierra Nevada shown by a comparison of the grades of the Neocene and present Tuolumne rivers.

   Abstract: Science, new ser., vol. 15, pp. 414-415, 1902.

10. Post-Tertiary elevation of the Sierra Nevada.

    Geol. Soc. Am., Bull., vol. 13, pp. 540-541, 1 pl., 1903.
    Discusses the age of the Sierra Nevada uplift.

11. The copper deposits of the Sierra Oscura, New Mexico.

    Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 678-681, 1 fig., 1903.
    Describes the geographic features and geologic structure of the region and the occurrence of copper-bearing reefs.

12. The Cretaceous auriferous conglomerate of the Cottonwood mining district, Siskiyou County, California.

    Eng. & Mg. Jour., vol. 76, pp. 653-654, illus., 1903.
    Discusses the character, occurrence, and geological relations of the rock formations, and the source of the gold contained in the conglomerate.

13. Notes on contact-metamorphic deposits in the Sierra Nevada Mountains.

    Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 666-668, 1904.
    Describes occurrences of deposits additional to those noted by Mr. Lindgren (Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 230-231).

14. Observations on Mother Lode gold deposits, California. [In discussion of paper of W. A. Prichard.]

    Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 973-974, 1904.
    Discusses the time-relations of the diorite intrusions and the fissuring.

15. The geological features of the gold production of North America. [In discussion of paper of Waldemar Lindgren.]

    Am. Inst. Mg. Engrs., Trans., vol. 34, p. 921, 1904.
    A note in regard to the geologic position of gold ores in the vicinity of Silver Peak, Nevada.

16. Native copper in greenstone from the Pacific coast.

    Eng. & Mg. Jour., vol. 77, p. 276, 1904.
    Discusses the occurrence and origin of native copper.

Turner (Henry W.)—Continued.

17. The Terlingua [Texas] quicksilver deposits.

Econ. Geol., vol. 1, pp. 265-281, 3 figs., 1906.

Describes the general geology, the geologic occurrence of the ore deposits, the character and extent of the lodes, the origin of the ores, and associated minerals.

Tuttle (George W.).

1. Recent changes in the elevation of land and sea in the vicinity of New York City.

Am. Jour. Sci., 4th ser., vol. 17, pp. 333-346, 1904.

Discusses detailed investigations upon tidal variation and their bearing upon the question of the elevation or subsidence of the land.

Tutton (C. H.).

1. The laws of river flow.

Assoc. of Eng. Soc., Jour., vol. 28, pp. 32-37, 1902.

Contains discussion on the origin and flow of streams.

Tyrrell (J. Burr).

1. Report on the east shore of Lake Winnipeg and adjacent parts of Manitoba and Keewatin, compiled by D. B. Dowling.

Can. Geol. Surv., new ser., vol. 11, Rept. G., 96 pp., 3 pls., 1901. Published in 1900.

Describes the physiography and drainage of the region and the character of the crystalline rocks.

2. A peculiar artesian well in the Klondike.

Eng. & Mg. Jour., vol. 75, p. 188, 1 fig., 1903.

Describes geologic structure of the region and the conditions producing the artesian flow of water.

3. Report on explorations in the northeastern portion of the district of Saskatchewan and adjacent parts of the district of Keewatin.

Can. Geol. Soc., Ann. Rept., new ser., vol. 13, 48 pp., 1 pl., and map, 1903. (Published separately, 1902.)

Describes the occurrence and characters of Pleistocene deposits and Cambro-Silurian and pre-Cambrian rocks, includes a list of glacial striæ and observations on the geologic structure, igneous rocks, and minerals of the region examined.

4. Crystosphenes or buried sheets of ice in the Tundra of northern America.

Jour. Geol., vol. 12, pp. 232-236, 1 fig., 1904.

Describes the occurrence, character, and mode of formation of the masses of ice for which the names crystosphene and crystocrene are proposed.

U.

Udden (Johan August).

1. A geological section across the northern part of Illinois.

Ill. Bd. of World's Fair Commissioners, Rept., pp. 117-151, 1 pl. (section). 1895.

Describes geology of northern Illinois and gives records of borings and other sections.

2. Geology of Louisa County [Iowa].

Iowa Geol. Surv., vol. 11, pp. 58-126, 1 pl., 1 fig., 2 maps, 1901.

Describes the physiography, the character and distribution of the Carboniferous and Pleistocene deposits and the occurrence of economic products.

3. Geology of Pottawattamie County [Iowa].

Iowa Geol. Surv., vol. 11, pp. 202-277, 1 pl., 3 figs., and map, 1901.

Describes the physiography, the character and occurrence of the Carboniferous, Cretaceous, and Pleistocene strata and the occurrence of economic products.

4. Loess with horizontal shearing planes.

Jour. Geol., vol. 10, pp. 245-251, 1902.

Describes partings in the loess and discusses their origin.

5. Geology of Jefferson County [Iowa].

Iowa Geol. Surv., vol. 12, Ann. Rept. for 1901, pp. 357-437, 4 figs., geol. map, 1902.

Describes physiographic and drainage features, the geologic formations, giving sections and lists of fossils, and the economic products of the county.

Udden (Johan August)—Continued.

6. On the occurrence of rhizopods in the Pella beds in Iowa.

Iowa Acad. Sci., Proc., vol. 9, p. 120, 1902.

7. Pleuroptyx in the Iowa Coal Measures.

Iowa Acad. Sci., Proc., vol. 9, p. 121, 1902.

8. Geology of Mills and Fremont counties [Iowa].

Iowa Geol. Surv., vol. 13, pp. 123-183, 4 pls., 1903.

Describes topography and drainage, character, occurrence, and geologic relations of Carboniferous and Cretaceous strata and surficial deposits, and economic resources. Includes a report by Prof. B. Shimek on the fossils from the loess of these counties.

9. Foraminiferal ooze in the Coal Measures of Iowa.

Jour. Geol., vol. 11, pp. 283-284, 1903.

10. Note to the article on "Foraminiferal ooze in the Coal Measures of Iowa."

Jour. Geol., vol. 11, p. 430, 1903.

Notes the occurrence of a bed of foraminiferal ooze in the upper Carboniferous of Texas.

11. The geology of the Shafter silver-mine district, Presidio County, Texas.

Tex. Univ. Min. Surv., Bull. no. 8, 60 pp., 11 figs., 2 pls., 1904.

Describes the physiographic features briefly and in detail the occurrence, character, and geologic relations of Carboniferous and Cretaceous strata, igneous rocks, and mineral deposits, mainly silver ores.

12. On the proboscidean fossils of the Pleistocene deposits in Illinois and Iowa.

Augustana Library Publications, no. 5, pp. 45-57, 1905.

Discusses the occurrences of the fossil remains of elephants and mammoths and their relations to Pleistocene deposits.

Udden (Jon Andreas).

1. Geology of Clinton County [Iowa].

Iowa Geol. Surv., vol. 15, Ann. Rept., 1904, pp. 369-431, 2 pls., 1 fig., 2 maps, 1905.

Describes the physiography, the occurrence, character, and relations of Ordovician, Silurian, and Carboniferous strata and Pleistocene deposits, and the economic resources.

Uhler (P. R.).

1. The Niagara period and its associates near Cumberland, Md.

Md. Acad. Sci., vol. 2, pp. 19-26, 1905.

Describes Silurian strata in the vicinity of Cumberland, Maryland, and gives lists of fossils obtained.

Ulrich (Edward Oscar).

1. Systematic paleontology, Eocene Arthropoda.

Md. Geol. Surv., Eocene, pp. 116-122, 1 pl., 1901.

2. Eocene Molluscoidea (Bryozoa).

Md. Geol. Surv., Eocene, pp. 205-222, 2 pls., 1901.

3. The lithographic stone deposits of eastern Kentucky.

Eng. & Mg. Jour., vol. 73, pp. 895-896, 2 figs., 1902.

Describes the geology of the region and the character of the lithographic stone.

4. Fossils and age of the Yakutat formation. Description of collections made chiefly near Kadiak, Alaska.

Harriman Alaska Expedition, vol. 4, pp. 125-146, 11 pls., 1904.

Discusses the geologic age of the Yakutat formation from the evidence of its fossils and gives systematic descriptions of these.

5. Determination and correlation of formations [of northern Arkansas].

U. S. Geol. Surv., Professional Paper no. 24, pp. 90-113, 1904.

Discusses the occurrence, character, geologic relations, and correlation of Ordovician, Silurian, Devonian, and Carboniferous formations of northern Arkansas.

6. Systematic paleontology of the Miocene deposits of Maryland: Hydrozoa.

Md. Geol. Surv., Miocene, pp. 433-438, 1 pl., 1904.

Ulrich (Edward Oscar)—Continued.

7. Portland-cement resources of Tennessee.

U. S. Geol. Surv., Bull. no. 243, pp. 301-307, 1905.

Describes the occurrence, geologic relations, and character of limestones in Tennessee suitable for the manufacture of Portland cement.

8. Lead, zinc, and fluorspar deposits of western Kentucky. Part I. Geology and general relations.

U. S. Geol. Surv., Professional Paper no. 36, pp. 15-105, 7 pls., 1905.

Describes the character, occurrence, nomenclature, correlation, topography, and paleontology of Devonian and Carboniferous, especially Mississippian, formations in western Kentucky and southern Illinois, giving illustrations of the fossils, the geologic structure, particularly the faulting, and the occurrence and character of the dikes.

9. [The time element in stratigraphy and correlation.]

Abstract: Science, new ser., vol. 21, p. 585, 1905.

Ulrich (Edward Oscar) and **Bassler** (Ray S.).

1. A revision of the Paleozoic bryozoa. Part I. On genera and species of Ctenostomata.

Smith. Misc. Coll., vol. 45 (Quart. Issue, vol. 1, pts. 3 and 4), pp. 256-294, 4 pls., 2 figs., 1904.

2. A revision of the Paleozoic bryozoa. Part II. On genera and species of Trepostomata.

Smith. Misc. Coll., vol. 47 (Quart. Issue, vol. 2, no. 1), pp. 15-55, 9 pls., 1904.

3. Systematic paleontology of the Miocene deposits of Maryland: Ostracoda.

Md. Geol. Surv., Miocene, pp. 98-130, 4 pls., 1904.

4. Systematic paleontology of the Miocene deposits of Maryland: Bryozoa.

Md. Geol. Surv., Miocene, pp. 404-429, 10 pls., 1904.

Ulrich (Edward Oscar) and **Schuchert** (Charles).

1. Paleozoic seas and barriers in eastern North America.

N. Y. State Mus., Bull. no. 52, pp. 633-663, 1 pl., 1902.

Reviews the evidences of the existence of barriers in the Paleozoic seas of the region, and discusses the relations and migrations of the faunas and the character and extent of the oscillations and their effect on the sedimentation and life.

Ulrich (Edward Oscar) and **Smith** (W. S. Tangier).

1. Lead, zinc, and fluorspar deposits of western Kentucky.

U. S. Geol. Surv. Bull. no. 213, pp. 205-213, 1903.

Describes the mining development and geologic structure of the region and the character and occurrence of the veins and vein minerals.

Ulrich (Edward Oscar), **Adams** (G. I.) and.

1. Fayetteville folio, Arkansas-Missouri.

See **Adams** (G. I.) and **Ulrich** (E. O.), 1.

Ulrich (Edward Oscar), **Bain** (H. F.) and.

1. The copper deposits of Missouri.

See **Bain** (H. F.) and **Ulrich** (E. O.), 1.

2. The copper deposits of Missouri.

See **Bain** (H. F.) and **Ulrich** (E. O.), 2.

Ulrich (Edward Oscar), **Hayes** (C. Willard) and.

1. Columbia folio, Tennessee.

See **Hayes** (C. W.) and **Ulrich** (E. O.), 1.

Underhill (James).

1. The correlation of Colorado geological formations.

Mg. Rep., vol. 52, pp. 496-497, 1905.

United States Geological Survey.

1. Geology, etc., of the Coosa Valley, Alabama.

56th Cong., 2d sess., Senate Doc. no. 65, 4 pp., 1901.

A letter from the Director of the United States Geological Survey submitting a brief sketch of the geology and natural resources of the Coosa Valley, in the State of Alabama.

United States Geological Survey—Continued.

2. The United States Geological Survey, its origin, development, organization, and operations.

U. S. Geol. Surv., Bull. no. 227, 205 pp., 9 pls., 5 figs., 1904.

Describes the organization and work of the U. S. Geological Survey and gives a full list of its publications.

Upham (Warren).

1. Artesian wells in North and South Dakota.

Minn. Acad. Nat. Sci., Bull., vol. 3, pp. 370–379, 1901.

2. Pre-Glacial erosion in the course of the Niagara gorge, and its relation to estimates of post-Glacial time.

Am. Geol., vol. 28, pp. 235–244, 1901.

Gives the author's views of the Glacial history of the region and discusses their bearing on estimates of post-Glacial time.

3. The antiquity of the races of mankind.

Am. Geol., vol. 28, pp. 250–254, 1901.

Reviews the evidences indicating the pre-Glacial origin of man.

4. The Toronto and Scarboro drift series [Ontario].

Am. Geol., vol, 28, pp. 306–316, 1901.

Quotes Coleman's description of these beds and discusses the bearing of the evidences on the existence of interglacial epochs of moderate oscillations of the ice border.

5. Time divisions of the Ice Age.

Victoria Inst., Jour., of Trans., vol. 33, pp. 393–410, 1901.

Describes glacial phenomena in North America, and discusses the correlation of the glacial deposits and time divisions of North America and Europe and the evidences as to the time of man's appearance upon the earth.

6. New evidence of epeirogenic movements causing and ending the Ice Age.

Am. Geol., vol. 29, pp. 162–169, 1902.

Reviews of work of Brögger and Nansen.

7. Growth of the Mississippi Delta.

Am. Geol., vol. 30, pp. 103-111, 1902.

Gives a historical sketch.

8. Man in the Ice Age of Lansing, Kansas, and Little Falls, Minnesota.

Am. Geol., vol. 30, pp. 135–150, 2 pls., 1902.

Describes the deposits in which the remains were found and gives estimates of the duration of the various divisions of the Ice Age.

9. Man in Kansas during the Iowan stage of the Glacial period.

Science, new. ser., vol. 16, pp. 355–356, 1902.

Describes the discovery and occurrence of human remains in glacial deposits near Lansing Kansas.

10. The fossil man of Lansing, Kansas.

Records of the Past, vol. 1, pp. 272-275, 3 figs., 1902.

Describes the finding of human remains near Lansing, Kansas, and discusses their antiquity.

11. Primitive man and stone implements in the North American loess.

Am. Antiquarian, vol. 24, pp. 413–420, 1902.

Describes the occurrence of human remains in the loess near Lansing, Kans.

12. Primitive man in the Ice Age.

Bibliotheca Sacra, vol. 59, pp. 730–743, 1902.

Describes the occurrence of human remains in the loess near Lansing, Kansas, and discusses, geological history during the Ice Age.

13. Primitive man in the Ice Age.

Memoirs of Explorations in the Basin of the Mississippi, vol. 5, Kakabikansing, pp. 116–119, St. Paul, Minn., 1902.

Discusses evidences as to the origin and antiquity of man in Europe and America and his place in the geological scale.

Upham (Warren)—Continued.

14. Valley loess and the fossil man of Lansing, Kansas.

Am. Geol. vol. 31, pp. 25-34, 1903.

Discusses distribution and origin of loess deposits and the evidences for the age of the fossiliferous remains found near Lansing, Kansas.

15. The life and work of professor Charles M. Hall.

Am. Geol., vol. 31, pp. 195-198, pl. 13 (por.), 1903.

16. How long ago was America peopled?

Am. Geol., vol. 31, pp. 312-315, 1903.

Discusses time estimates of Glacial and post-Glacial periods and evidences of antiquity of man in America.

17. Glacial Lake Nicolet and the portage between the Fox and Wisconsin rivers.

Am. Geol., vol. 32, pp. 105-115, 1903.

18. The antiquity of the fossil man of Lansing, Kansas.

Am. Geol., vol. 32, pp. 185-187, 1903.

19. The Glacial lakes Hudson-Champlain and St. Lawrence.

Am. Geol., vol. 32, pp. 223-230, 1903.

20. Glacial Lake Jean Nicolet.

Am. Geol., vol. 32, pp. 330-331, 1903.

As the name Lake Nicollet had been previously used by Winchell, the writer amends his name Lake Nicolet to the form given above.

21. Geology of Prairie Island [Minnesota].

Memoirs of Exploration in the Basin of the Mississippi, vol. 6, Minnesota, pp. 34-38, 1903.

22. The past and future of Niagara Falls.

State Reservation at Niagara, Comm. 19th Ann. Rept., pp. 231-254, 1903.

23. Moraines and eskers of the last glaciation in the White Mountains.

Am. Geol., vol. 33, pp. 7-14, 1904.

Calls attention to previous work in this region and describes the character and occurrence of moraines and eskers and distribution of boulders.

24. Boulders due to rock decay.

Am. Geol., vol. 33, pp. 370-375, 1904.

Describes occurrence and origin of boulders at Butte, Montana, concludes that many Glacial boulders are the result of rock decay, and discusses the occurrence and distribution of Glacial boulders.

25. Erosion on the Great Plains and on the Cordilleran Mountain belt.

Am. Geol., vol. 34, pp. 35-39, 1904.

Discusses the physiographic history of the Great Plains and Cordilleran regions during Tertiary and Quaternary times.

26. Age of the Missouri River.

Am. Geol., vol. 34, pp. 80-87, 1904.

Includes observations on the geologic history and physiographic features of the interior portion of the North American Continent.

27. Outer Glacial drift in the Dakotas, Montana, Idaho, and Washington.

Am. Geol., vol. 34, pp. 151-162, 1904.

Reviews the work of tracing drift boundaries across the United States, and describes the occurrence and character of the Glacial drift deposits in the Northwestern States.

28. Glacial and modified drift in and near Seattle, Tacoma, and Olympia [Washington].

Am. Geol., vol. 34, pp. 203-214, 1 pl., 1904.

Describes the probable successive stages in glaciation, and the character and occurrence of Glacial drift deposits.

29. The nebular and planetesimal theories of the earth's origin.

Am. Geol., vol. 35, pp. 202-220, 1905; Victoria Inst., Jour. of Trans., vol. 37, pp. 186-204, 1905.

Upham (Warren)—Continued.

30. Fjords and hanging valleys.

Am. Geol., vol. 35, pp. 312-315, 1905.

Discusses the relations of these physiographic features and their origin, and the evidence they give as to the cause of the Glacial epoch.

31. Age of the St. Croix Dalles.

Am. Geol., vol. 35, pp. 347-355, 1905.

Discusses various Glacial phenomena of the region and their bearing upon the time and mode of formation of the Dalles of the St. Croix River.

32. Glacial lakes and marine submergence in the Hudson-Champlain valley.

Am. Geol., vol. 36. pp. 285-289, 1905.

33. Geological history of the Great Lakes and Niagara Falls.

Intern. Quart., vol. 11, pp. 248-265, 1905.

Ussing (N. V.).

1. Mineralogisk-petrografiske undersoegelser af Groenlandske nefelinsyeniter og beslægtede bjægarter.

Meddelelser om Groenland, vol. 14, pp. 1-220, 7 pls., 1898.

Describes mineralogy and petrology of Greenland.

V.

Vaillant (Léon).

1. Sur la présence du tissu osseux chez certains poissons des terrains palæozoiques de Canyon City, Colorado.

Acad. des Sci. [Paris]. Compt. rend., t. 134, pp. 1321-1322, 1902.

Notes the presence of osseous tissue in certain fish remains from Paleozoic strata near Canyon City, Colorado.

Van der Grinten (Alphons J.).

1. New circular projection of the whole earth's surface.

Am. Jour. Sci., 4th ser., vol. 19, pp. 357-366, 6 figs., 1905.

Van Diest (P. H.).

1. A mineralogical mistake.

Colo. Sci. Soc., Proc., vol. 6, pp. 150-156, 1 pl. [1902].

Contains observations on occurrence of rocks and ores, and describes the efforts to find tin in the Greenhorn Mountains of Colorado.

Van Hise (Charles R.).

1. Some principles controlling the deposition of ores.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 27-177, 10 figs., 1901. Abstract: Am. Jour. Sci., 4th ser., vol. 11, p. 90, 1901; Eng. & Mg. Jour., vol. 72, pp. 699-702, 1901.

This subject is discussed under the following general heads: Three zones of the lithosphere; the water content and openings in rocks; physico-chemical principles controlling the work of underground waters; general geologic work of underground waters; the precipitation of ores by ascending waters; precipitation of ores by ascending and descending waters combined; the association of certain ores; concentration; enrichment and diminution of richness in depth; special factors affecting the concentration of ores, and the classification of ore deposits.

2. The iron-ore deposits of the Lake Superior region.

U. S. Geol. Surv., 21st Ann. Rept., pt. 3, pp. 305-434, 12 pls., 1901.

Describes the general stratigraphy and occurrence of iron ores in the several districts of the Lake Superior region. The Mesabi district is by C. R. Van Hise and C. K. Leith. The Vermilion iron-bearing district is by C. R. Van Hise and J. Morgan Clements.

3. The geology of ore deposits.

Science, new ser., vol. 14, pp. 745-757, 6 figs., 785-793, 1901. Abstract: Sci. Am. Suppl., vol. 52, p. 21504, 1901.

Discusses the evidences that metallic ores and gangue are deposited by underground waters.

4. [Discussion of "Ice ramparts," by E. R. Buckley].

Wis. Acad. Sci. Arts and Letters, Trans., vol. 13, pt. 1, pp. 158-162, 5 pls., 1901.

Compares the phenomena of ice deformation with those of crustal deformation.

Van Hise (Charles R.)—Continued.

5. Introduction to "Preliminary report on the lead and zinc deposits of the Ozark region," by H. F. Bain.

U. S. Geol. Surv., 22d Ann. Rept., pt. 2, pp. 33-60, 1901.

Discusses character, origin, and concentration of lead and zinc ores of the upper Mississippi Valley and of the Ozark region of the lower Mississippi Valley.

6. Geological excursion in Colorado.

Geol. Soc. Am., Bull., vol. 13, pp. 2-5, 1901.

Contains brief notes on the geology of the points visited.

7. The training and work of a geologist.

Am. Geol., vol. 30, pp. 150-170, 1902; Science, new ser., vol. 16, pp. 321-334, 1902; Am. Assoc. Adv. Sci., Proc. Fifty-first meeting, pp. 399-420, 1902.

8. Some principles controlling the deposition of ores. [Continuation of paper in vol. 30, 1901.]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 284-302, 1902.

Reviews recent papers that have been published since the author's discussions of the subject, with special reference to the paper by Professor Kemp on "The rôle of the igneous rocks in the formation of veins."

9. Geological work in the Lake Superior region.

Lake Sup. Mg. Inst., Proc. for 1902, vol. 8, pp. 62-69 [1903].

Discusses the difficulties of geologic work in this region and gives an historical review of the work that has been done.

10. Powell as an explorer.

Wash. Acad. Sci., Proc., vol. 5, pp. 105-112, 1903.

11. Genetic classification of ore deposits.

Abstract: Science, new ser., vol. 17, pp. 542-543, 1903.

12. A treatise on metamorphism.

U. S. Geol. Surv., Mon., vol. 47, 1286 pp., 13 pls., 32 figs., 1904.

13. Report on geophysics.

Carnegie Inst. of Wash., Yearb. no. 2, 1903, pp. 173-184, 1904.

Discusses establishment of a geophysical laboratory and the work to be done therein.

14. Lake Superior geological work.

Abstract: Mg. World, vol. 21, pp. 197-198, 2 figs., 1904.

Gives general observations on geologic work in the Lake Superior iron region.

Extract from paper read before the Lake Superior Mining Institute.

15. The problems of geology.

Jour. Geol., vol. 12, pp. 589-616, 1904.

16. A correction.

Jour. Geol., vol. 13, p. 280, 1905.

Corrects an error occurring in the author's "A treatise on metamorphism."

Van Hise (C. R.) and others.

1. Report of the special committee for the Lake Superior region. Introductory note by C. R. Van Hise.

Jour. Geol., vol. 13, pp. 89-104, 1905; Ont. Bur. Mines, Rept., vol. 14, pt. 1, pp. 269-277, 1905; Geol. Surv. Mich., Rept. for 1904, pp. 133-143, 1905.

Describes the investigations of a special committee of geologists of the Geological Survey of Canada and of the United States Geological Survey upon the relations, classification, and nomenclature of the formations of the Lake Superior region, and gives their conclusions in tabular form. The report is alphabetically signed by Frank D. Adams, Robert Bell, A. C. Lane, C. K. Leith, W. G. Miller, Charles R. Van Hise.

Van Hise (Charles R.) and **Bain** (H. Foster.)

1. Lead and zinc deposits of the Mississippi Valley, U. S. A.

Inst. Mg. Engrs. [England], Trans., vol. 23, pp. 376-434, 14 figs., 1902.

Describes the geographic distribution and stratigraphy of the lead and zinc producing areas of the Mississippi Valley and discusses the occurrence and genesis of the ore deposits.

Van Horn (F. B.)

1. The geology of Moniteau County [Missouri].

Mo. Bur. Geol. & Mines, 2d ser., vol. 3, pp. 10-104, 13 pls., 25 figs., 1905.
Describes the physiography, the occurrence, character, and relations of Cambrian, Ordovician, Devonian, and Carboniferous strata, various structural features, and the economic resources.

Van Ingen (Gilbert).

1. The Siluric fauna near Batesville, Arkansas, I.

School of Mines Quart., vol. 22, pp. 318-328, 1 fig., 1901. Columbia Univ., Geol. Dept., Contr. vol. 9, no. 76.
Describes the geologic relations of the strata. Includes a bibliography.

2. The Siluric fauna near Batesville, Arkansas.

School of Mines Quart., vol. 23, pp. 34-74, 14 figs., 1901. Columbia Univ., Geol. Dept., Contr. vol. 9, no. 76, pt. 2.
Describes the characters of the various species collected.

3. [Paleozoic rocks of northwestern New Jersey.]

Abstract: Am. Geol., vol. 27, pp. 42-43, 1901.
Contains considerable data on the Paleozoic strata and faunas of New Jersey.

4. Potsdam sandstone of the Lake Champlain Basin.

N. Y. State Mus., Bull. no. 52, pp. 529-545, geol. map, 1902.
Describes certain sections and discusses briefly the results of the investigations.

5. A method of facilitating photography of fossils.

Abstract: N. Y. Acad. Sci., Ann., vol. 14, pp. 115-116, 1902.

6. The rounded sands of Paleozoic formations.

Abstract: Science, new ser., vol. 21, p. 807, 1905.

Van Ingen (Gilbert) and **Clark** (P. Edwin).

1. Disturbed fossiliferous rocks in the vicinity of Rondout, N. Y.

N. Y. State Mus., Bull. 69, pp. 1176-1227, 13 pls., 1903.
Describes location, stratigraphy, paleontology, and structural features of Silurian and Devonian strata in the city of Rondout, New York, and its vicinity.

Van Vleet (A. H.).

1. [Second biennial report of the Department of Geology and Natural History of Oklahoma.]

Okla., Dept. Geol. & Nat. Hist., 2d Bien. Rept., pp. 9-16, 1902.
Outlines the work and status of the Department of Geology and Natural History of the Territory of Oklahoma.

Vaughan (T. Wayland).

1. Eocene Cœlenterata.

Md. Geol. Surv., Eocene, pp. 222-232, 1 pl., 1901.

2. Some fossil corals from the elevated reefs of Curaçao, Arube, and Bonaire.

Sammlungen d. Geol. Reichs-Museum, Leiden, ser. 2, Bd. 2, Heft 1, 1901.

3. The stony corals of the Porto Rican waters.

U. S. Fish Comm., Bull., vol. 2, for 1900, pp. 289-320, 38 pls., 1901.
In addition to describing recent species of corals, gives notes on fossil species from the United States and the West Indies.

4. Shell Bluff, Georgia, one of Lyell's original localities.

Abstract: Science, new ser., vol. 13, p. 270, 1901.
Contains abstract of paper read before the Geological Society of Washington.

5. Review of recent papers on Bahaman corals.

Science, new ser., vol. 14, pp. 497-498, 1901.

6. The copper mines of Santa Clara Province, Cuba.

Eng. & Mg. Jour., vol. 72, pp. 814-816, 4 figs., 1901.
Describes the geology and occurrence and character of the ore bodies.

7. The locality of the type of Prionastræa vaughani, Gregory.

Ann. & Mag. Nat. Hist., 7th ser., vol. 7, p. 300, 1901.

Vaughan (T. Wayland)—Continued.

8. Bitumen in Cuba.

Eng. & Mg. Jour., vol. 73, pp. 344–347, 2 figs., 1902.
Describes the occurrence and character of the material.

9. Notes on Cuban fossil mammals.

Science, new ser., vol. 15, pp. 148–149, 1902.
Questions the occurrence of certain fossil remains in Cuba and gives a note on the priority of Megalocnus Leidy over Myomorphus Pomel.

10. Earliest Tertiary coral reefs in the Antilles and United States.

Abstract: Science, new ser., vol. 15, pp. 506–507, 1902.

11. Evidence of recent elevation of the Gulf coast along the westward extension of Florida.

Science, new ser., vol. 16, pp. 5–14, 1902.

12. Fuller's earth of southwestern Georgia and western Florida.

U. S. Geol. Surv., Min. Res., 1901, pp. 922–934, 1902.
Describes the occurrence of fuller's earth deposits in Georgia and Florida, and discusses their geologic age from the evidence of fossils.

13. Some recent changes in the nomenclature of West Indian corals.

Wash. Biol. Soc., Proc., vol. 15, pp. 53-58, 1902.

14. An addition to the coral fauna of the Aquia Eocene formation of Maryland.

Wash. Biol. Soc., Proc., vol. 15, pp. 205–206, 1902.

15. A redescription of the coral Platytrochus speciosus.

Wash. Biol. Soc., Proc., vol. 15, pp. 207–209, 1902.

16. Corrections to the nomenclature of the Eocene fossil corals of the United States.

Wash. Biol. Soc., Proc., vol. 16, p. 101, 1903.

17. The corals of the Buda limestone.

U. S. Geol. Surv., Bull. no. 205, pp. 37–40, 1 pl., 1903.

18. Fuller's earth deposits of Florida and Georgia.

U. S. Geol. Surv., Bull. no. 213, pp. 392–399, 1903.
Describes geographic and geologic occurrence and character of deposits of fuller's earth in these States.

19. Systematic paleontology of the Miocene deposits of Maryland: Anthozoa.

Md. Geol. Surv., Miocene, pp. 438–447, 8 pls., 1904.

20. A Californian Tertiary coral reef and its bearing on American recent coral faunas.

Abstracts: Science, new ser., vol. 19, p. 503, 1904; Geol. Centralbl., Bd. 5, p. 526, 1904.

21. A critical review of the literature on the simple genera of the Madreporaria Fungida, with a tentative classification.

U. S. Nat. Mus., Proc., vol. 28, pp. 371–424, 1905.

Vaughan (T. Wayland) and **Spencer** (Arthur Coe).

1. The geography of Cuba.

Am. Geog. Soc., Bull., vol. 34, pp. 105–116, 1902.
Describes the mountains, plains, terraces, drainage, and harbors of Cuba.

Vaughan (T. Wayland), **Hayes** (C. Willard), and **Spencer** (Arthur Coe).

1. Report on a geological reconnaissance of Cuba.

See Hayes (C. W.), Vaughan (T. W.), and Spencer (A. C.), 1.

Vaughan (T. Wayland), **Hill** (Robert T.) and.

1. Austin folio, Texas.

See Hill (R. T.) and Vaughan (T. W.), 1.

Vaux (George) and (William S., jr.).

1. Observations made in 1900 on glaciers in British Columbia.

Phil. Acad. Nat. Sci., Proc. for 1901, pp. 213–215, 1901.
Notes on movements of the glaciers.

Vaux (George) and (William S., jr.).

2. Les variations périodiques des glaciers. IX^{me} rapport. Colombie anglaise et Alberta.

   Arch. des Sci. phys. et nat., 4th pér., t. 18, pp. 194-195, 1904.

Veatch (Arthur C.).

1. The salines of north Louisiana.

   La. Geol. Surv., pt. 6, pp. 47-100, 13 pls., 2 figs., 1902.

   Describes the local geology of the various salt works, and discusses the geological structure and history of the region.

2. The geography and geology of the Sabine River, Louisiana.

   La. Geol. Surv., pt. 6, pp. 107-141, 14 pls., 4 figs., 1902.

   Describes the physiography and the character and occurrence of the Tertiary strata of the region.

3. Notes on the geology along the Ouachita [Louisiana].

   La. Geol. Surv., pt. 6, pp. 153-170, 2 pls., 1902.

   Describes the physiography and Tertiary beds of the region.

4. The diversity of the Glacial period on Long Island.

   Jour. Geol., vol. 11, pp. 762-776, 6 figs., 1903.

   Discusses character, occurrence, geologic position, and correlation of glacial deposits on Gardiners and Long Islands, New York.

5. Notes on the geology of Long Island.

   Science, new ser., vol. 18, pp. 213-214, 1903.

   Discusses the occurrence of Quaternary formations and their relation to pre-Glacial topography.

6. Some peculiar artesian conditions on Long Island, N. Y.

   Abstract: Science, new ser., vol. 19, pp. 795-796, 1904.

7. The underground waters of northern Louisiana and southern Arkansas.

   La. State Exp. Station, Geol. Surv. Bull. no. 1, pp. 82-91, 1 pl., 1905.

   Describes the character and occurrence of Cretaceous and Tertiary strata in northern Louisiana and their water-bearing properties.

8. Underground waters of eastern United States: Louisiana and southern Arkansas.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 179-187, 4 figs., 1905.

   Describes the general geology, and the character and occurrence of the geologic formations with particular reference to their water-bearing qualities.

9. Record of deep-well drilling for 1904. General plan and details of work.

   U. S. Geol. Surv., Bull. no. 264, pp. 28-39, 1905.

10. The question of origin of the natural mounds of Louisiana, Arkansas, and Texas.

    Abstract: Science, new ser., vol. 21, pp. 310-311, 350-351, 1905.

Vermeule (C. C.).

1. East Orange wells at White Oak Ridge, Essex County [New Jersey].

   N. J. Geol. Surv., Ann. Rept. for 1904, pp. 255-263, 2 figs., 1905.

   Discusses strata passed through in the wells.

Verrill (A. E.).

1. Peculiar character of the eruption of Mt. Pelée, May 8th.

   Am. Jour. Sci., 4th ser., vol. 14, pp. 72-74, 1902.

   Discusses the cause of the destruction of St. Pierre.

Very (Frank W.).

1. A cosmic cycle.

   Am. Jour. Sci., 4th ser., vol. 13, pp. 47-58, 97-114, 185-196, 1902.

Vicaire (A.).

1. Développements récents des industries minière et métallurgique en Colombie britannique.

   Ann. des Mines, 10^{e} sér., t 5, pp. 297-388, 10 figs., 1904.

   Includes an account of the geology of the Crow's Nest Pass coal field and the Boundary mining district.

Villada (Manuel M.)

1. **Breve reseña geológica del terreno comprendido en las obras del Desagüe del Valle de México y en general de toda esta región.**

   México, Mus. Nac., Anales, t. 1, pp. 172-184, 1904.
   Gives an account of the geology of the Valley of Mexico.

Villafaña (Andrés).

1. **Criaderos cupro-argentiferos en Tapalpa, Jal. [México].**

   Soc. Geol. Mex., Bol., t. 1, pp. 135-138, 1905.
   Describes the character, occurrence, and relations of silver-copper ores in Jalisco, Mexico.

Villarello (Juan D.).

1. **Genesis de los yacimientos mercuriales de Palomas y Huitzuco, en los estados de Durango y Guerrero de la Republica Mexicana.**

   Soc. Cien. Ant. Alz., Mem. y Rev., vol. 20, pp. 95-136, 1903.
   Discusses origin of mercury-bearing ore deposits.

2. **Análisis y clasificación de un granate procedente del mineral de Pihuamo, Jalisco [México].**

   México, Inst. Geol., Par., t. 1, pp. 75-80, 1904.
   Describes the chemical composition and discusses the systematic position of a garnet occurring at Pihuamo, Mexico.

3. **Estudio de la teoría química propuesta por el Sr. D. Andrés Almaraz para explicar la formación del petróleo de Aragón, México.**

   México, Inst. Geol., Par., t. 1, pp. 95-111, 1904.
   Discusses the chemical theory for the origin of the petroleum of Aragon, proposed by Andrés Almaraz.

4. **Estudio de una muestra de mineral asbestiforme procedente del rancho del Ahuacatillo, Distrito de Zinapécuaro, Michoacán [México].**

   México, Inst. Geol., Par., t. 1, pp. 133-149, 1904.
   Gives a description and an analysis, and discusses the classification of an asbestiform mineral occurring in the State of Michoacan, Mexico.

5. **Estudio de la hidrología interna de los alrededores de Cadereyta Mendez, Estado de Queretaro [México].**

   México, Inst. Geol., Par., t. 1, pp. 155-208, 1 pl., 1904.
   Discusses the hydrology and geology of the region.

6. **Descripción de los criaderos de mercurio de Chiquilistán (Jalisco) [México].**

   Soc. Cient. Ant. Alz., Mem. y Rev., t. 20, pp. 389-397, 1904.
   Describes the occurrence, geologic relations, and character of ore deposits containing mercury in the State of Jalisco, Mexico.

7. **Análisis y clasificación de un granate procedente del Mineral de Pihuamo, Jalisco.**

   Méx., Secretaría de Fomento, Bol., seg. epoca, año 4, núm. 5, IV, pp. 85-90, 1904.

8. **Distribución de la riqueza en los criaderos metalíferos primarios epigenéticos.**

   Soc. Geol. Mex., Bol., t. 1, pp. 175-206, 1906.
   Discusses the origin of ore deposits.

9. **Description de las minas "Santiago y Anexas" de Estado de Michoacan [México].**

   Soc. Cient. "Ant. Alzate," Mem. y Rev., t. 22, pp. 125-140, 3 pls., 1 fig., 1906.
   Describes briefly the general geology of the region, and the occurrence, character, and origin of the gold and silver ore.

10. **Hidrología subterranea de los alrededores de Queretaro [México].**

    México, Inst. Geol., Par., t. 1, pp. 239-289, 3 pls., 2 figs., 1906.
    Describes the physiography, geology, and underground water resources of the region surrounding Queretaro, Mexico.

Villarello (Juan de D.) and **Böse** (Emilio).

1. **Criaderos de fierro de la hacienda de Vaquerias, en el estado de Hidalgo.**

   Mexico Inst. Geol., Bull. no. 16, pp. 15-44, 4 pls., 3 figs., 1902.
   Describes the topography, geology and petrology, and discusses the occurrence of iron ores in this area.

Villaseñor (F.).

1. Análisis de las cenizas de la erupción del volcán de Santa María (Guatemala), ocurrida el 24 de octubre de 1902, recogidas en Comitán.

   Secretaría de Fomento [México], Bol., 2ª ép., año 2, no. 7, II, pp. 279-280, 1903.
   Discusses the composition of cinders ejected by the volcano of Santa Maria in Guatemala.

Vogdes (Anthony W.).

1. A bibliography relating to the geology, paleontology, and mineral resources of California.

   Cal. State Mg. Bur., Bull. no. 30, pp. 7-258, 1904.

2. Address on books relating to geology, mineral resources, and paleontology of California.

   San Diego Soc. Nat. Hist., vol. 1, no. 1, pp. 9-23, 1905.

Vogt (J. H. L.).

1. Problems in the geology of ore-deposits.

   Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 125-169, 1902.
   Discusses genesis of ore deposits.

Von Rosenberg (Leo).

1. Report on the properties of the Summit Coal Company, situated in Marshall County, State of West Virginia.

   New York, 12 pp., 9 pls., 1903. (Privately printed.)
   Contains geologic sections of Carboniferous strata and data bearing on coal production.

Voyle (Joseph).

1. Aurite, and a general theory of gold ore genesis.

   Mg. & Sci. Press, vol. 86, pp. 382-383, 1903.

W.

Wagenen (T. H. van).

1. Nitrate deposits, Humboldt County, Nevada.

   Mg. & Sci. Press, vol. 84, p. 63, 1902.
   Brief description of occurrence.

Wagner (George).

1. Observations on Platygonus compressus Le Conte.

   Jour. Geol., vol. 11, pp. 777-782, 4 figs., 1903.

2. On an interesting fossil Unio from Wisconsin.

   Nautilus, vol. 18, pp. 97-100, 1 pl., 1905.

Walcott (Charles D.).

1. Cambrian Brachiopoda; Obolella, subgenus Glyptias; Bicia; Obolus, subgenus Westonia; with description of new species.

   U. S. Nat. Mus., Proc., vol. 23, pp. 669-695, 1901.

2. The work of the United States Geological Survey in relation to the mineral resources of the United States.

   Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 3-26, with map, 1901.
   Gives a general account of the work of the U. S. Geological Survey in the development of the mineral resources of the country.

3. Twenty-second Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior, 1900-1901.

   U. S. Geol. Surv., 22d Ann. Rept., pt. 1, pp. 1-207, 24 pls., 1901.
   Gives an account of the work of the U. S. Geological Survey for the year.

4. Sur les formations pré-Cambriennes fossilifères.

   Intern. Cong. Géol., Compte Rendu, viii session, pp. 299-312, 1901.
   Describes the lithologic and faunal characters of the pre-Cambrian strata in various parts of the United States.

Walcott (Charles D.)—Continued.

5. Outlook of the geologist in America.

Geol. Soc. Am., Bull., vol. 13, pp. 99-118, 1902.

Reviews the geologic investigations that have been undertaken in North America by organizations and individuals, broadly outlines the problems that are being studied, and discusses the future prospects of geologists.

6. Cambrian brachiopoda: Acrotreta; Linnarssonella; Obolus; with descriptions of new species.

U. S. Nat. Mus., Proc., vol. 25, pp. 577-612, 1902.

7. Twenty-third Annual Report of the Director of the U. S. Geological Survey to the Secretary of the Interior.

Washington, Government Printing Office, 1902. 217 pp., 26 pls.

Gives an account of the work of the U. S. Geological Survey for the year 1901-2.

8. New term for the Upper Cambrian series.

Jour. Geol., vol. 11, pp. 318-319, 1903.

Proposes the term Saratogian for Upper Cambrian, and gives a list of formations referred to it.

9. John Wesley Powell.

Wash. Acad. Sci., Proc., vol. 5, pp. 99-130, 1 pl. (por.), 1903.

10. Twenty-fourth annual report of the Director of the United States Geological Survey to the Secretary of the Interior, 1902-3.

Washington, Government Printing Office, 1903. 302 pp., 26 pls.

Gives an account of the work of the U. S. Geological Survey for the year 1902-3. Includes a biographical sketch of J. W. Powell.

The rules governing the nomenclature and classification of geologic formations promulgated in the Tenth Annual Report, pp. 63-79, have been recently revised and, as revised, are given in this report on pp. 21-27.

11. Twenty-fifth Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior, 1903-4.

Washington, Government Printing Office, 1904. 388 pp., 25 pls. and 2 figs.

Gives an account of the work of the U. S. Geological Survey during the fiscal year 1903-4.

12. Cambrian Brachiopoda with descriptions of new genera and species.

U. S. Nat. Mus., Proc., vol. 28, pp. 227-337, 1905.

13. Twenty-sixth Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior, 1904-5.

Washington, Government Printing Office, 1905. 322 pp., 25 pls., 1 fig.

Outlines the operations of the U. S. Geological Survey for the fiscal year ending June 30, 1905.

Waldo (C. A.).

1. Dikes in the Oklahoma Panhandle.

Abstract: Eng. & Mg. Jour., vol. 75, p. 153, 1903; Science, new ser., vol. 17, p. 220, 1903: Sci. Am. Suppl., vol. 55, p. 22647, 1903.

Walker (B. E.).

1. List of the published writings of Elkanah Billings.

Can. Rec. Sci., vol. 8, pp. 366-388, 1901.

Walker (Bryant).

1. On the shells of marls.

Mich. Geol. Surv., vol. 8, pt. 3, pp. 97-102, 1903.

Describes the occurrence of gastropodous shells in Michigan marl deposits.

Walker (T. L.).

1. The Geological Survey of Canada as an educational institution.

Can. Mg. Inst., Jour., vol. 7, pp. 435-449, 1904.

Wallace (E. C.), **Richardson** (Clifford) and.

1. Petroleum from the Beaumont, Texas, field.

See **Richardson** (Clifford) and **Wallace** (E. C.), 1.

Wanner (Atreus).

1. A new species of Olenellus from the Lower Cambrian of York County, Pennsylvania.

   Wash. Acad. Sci., vol. 3, pp. 267-272, 2 pls., 1901.

Ward (Henry A.).

1. The Ste. Genevieve meteorite.

   Rochester Acad. Sci., Proc., vol. 4, pp. 65-66, 1 pl., 1901.
   Describes occurrence and characters of this meteorite from Ste. Genevieve County, Mo.

2. Catalogue of the Ward-Coonley collection of meteorites.

   Chicago, 99 pp., 6 pls., 1900; 28 pp , 1901. (Private publication.)
   Contains notes on the character and occurrence of meteorites.

3. Description of four meteorites.

   Rochester Acad. Sci., Proc., vol. 4, pp. 79-88, 5 pls., 1902.
   Describes meteorites from Andover, Me.; Cuernavaca, Mexico; Arispe, Mexico; and from near Williamsport, Pa.

4. On Bacubirito, or the great meteorite of Sinaloa, Mexico.

   Am. Geol., vol. 30, pp. 203-211, 6 pls., 1902; Rochester Acad. Sci., Proc., vol. 4, pp. 67-74, 4 pls. 1902.
   Describes occurrence, size, and characters of this meteoric mass.

5. The Bath Furnace [Kentucky] meteorite.

   Am. Jour. Sci., 4th ser., vol. 15, pp. 316-319, 1 fig., 1903.
   Describes fall and characters.

6. The Andover [Maine] meteorite.

   Am. Jour. Sci., 4th ser., vol. 15, pp. 395-396, 1 fig., 1903.

7. The Canyon City meteorite from Trinity County, California.

   Am. Jour. Sci., 4th ser., vol. 17, pp. 383-384, 1 fig., 1904.
   Describes source, character, and composition.

8. The Willamette [Oregon] meteorite.

   Rochester Acad. Sci., Proc., vol. 4, pp. 137-148, 6 pls., 1904; Sci. Am. Suppl., vol. 58, pp. 23838-23840, 9 figs., 1904.
   Describes the discovery, location, and characters.

9. Catalogue of the Ward-Coonley collection of meteorites.

   Chicago, 113 pp., 9 pls., 1904. (Private publication.)
   Contains notes on the character and occurrence of meteorites.

10. The Billings meteorite: A new iron meteorite from southern Missouri.

    Am. Jour. Sci., 4th ser., vol. 19, pp. 240-242, 2 figs., 1905.
    Describes the occurrence, characters, and composition.

11. Great meteorite collections and their composition.

    Rochester Acad. Sci., Proc., vol. 4, pp. 149-164, 1 pl., 1904.

12. Bath Furnace aerolite.

    Rochester Acad. Sci., Proc., vol. 4, pp. 193-202, 1 pl., 1905.
    Describes the fall, exterior preservation, and character of one piece of the Bath Furnace meteorite, and discusses phenomena connected with the passage of aerolites through the earth's atmosphere, and their source.

Ward (Lester F.).

1. Geology of the Little Colorado Valley [Arizona].

   Am. Jour. Sci., 4th ser., vol. 12, pp. 401-413, 1901.
   Describes the character and occurrence of the several subdivisions of the Mesozoic strata of the region.

2. The petrified forests of Arizona.

   Smith. Inst., Ann. Rept. 1899, pp. 289-307, 1901.

3. Correlation of the Potomac formation in Maryland and Virginia.

   Abstract: Science, new ser., vol. 17, pp. 941-942, 1903.

Ward (Lester F.)—Continued.

4. Paleozoic seed plants.

Science, new ser., vol. 20, pp. 279-281, 1904.

5. Status of the Mesozoic floras of the United States. Second Paper.

U. S. Geol. Surv., Mon., vol. 48, pt. 1, Text, 616 pp.; pt. 2, Plates, 119 pls., 1905.

Describes the stratigraphic and paleontologic relations of the older Mesozoic of Arizona, and gives an account of the status of knowledge of Triassic, Jurassic, and Cretaceous floras and a summary of geologic work upon these floras. Includes papers by Fontaine, Bibbins, and Wieland, giving systematic descriptions of species and notes upon various floras.

6. An example in nomenclature.

Science, new ser., vol. 21, pp. 110-111, 1905.

Discusses nomenclature applied to Aneimites fertilis n. sp., David White.

Waring (G. A.).

1. Quartz from San Diego County, California.

Am. Jour. Sci., 4th ser., vol. 20, pp. 125-127, 2 figs., 1905.

Describes crystallographic features.

2. The pegmatyte veins of Pala, San Diego County [California].

Am. Geol., vol. 35, pp. 356-369, 5 pls., 3 figs., 1905.

Describes the occurrence and character of intrusive veins, the types of veins, and the petrographic characters and minerals of the rocks composing them, and discusses their origin.

Warman (Philip Creveling).

1. Catalogue and index of the publications of the United States Geological Survey, 1880 to 1901.

U. S. Geol. Surv., Bull. no. 177, 858 pp., 1901.

2. Catalogue and index of the publications of the United States Geological Survey, 1901 to 1903.

U. S. Geol. Surv., Bull. no. 215, 234 pp., 1903.

3. Catalogue of the published writings of John Wesley Powell.

Wash. Acad. Sci., Proc., vol. 5, pp. 131-187, 1903.

Warren (C. H.).

1. Mineralogical notes. I. Native arsenic from Arizona. II. Anthophyllite with the fayalite from Rockport, Mass. III. Cerussite and phosgenite from Colorado.

Am. Jour. Sci., 4th ser., vol. 16, pp. 337-344, 1903.

Describes occurrence and characters of these minerals.

2. Petrographical notes on the rocks of the Weston aqueduct [Massachusetts].

Tech. Quart., vol. 17, pp. 117-123, 1904.

Describes their occurrence and petrographic characters.

Warren (C. H.), **Penfield** (S. L.) and.

1. Some new minerals from the zinc mines at Franklin, N. J., and note concerning the chemical composition of ganomalite.

See **Penfield** (S. L.) and **Warren** (C. H.), 1.

Warwick (A. W.).

1. The iron ores of the Uintah Mountains.

Mg. Rep., vol. 50, pp. 166-167, 1904.

Describes the geology and the character and occurrence of iron-ore deposits.

2. The Leadville district [Colorado].

Mg. Mag., vol. 11, pp. 430-439, 5 figs., 1905.

Includes notes on the geology of the district.

Washburne (Chester).

1. Notes on the marine sediments of eastern Oregon.

Jour. Geol., vol. 11, pp. 224-229, 1903.

Describes occurrence of fossiliferous limestone of Carboniferous age and gives notes on the occurrence of strata and fossils of Triassic, Jurassic, and Cretaceous age. Includes reports by George H. Girty on the fossils collected from the Carboniferous limestone and by T. W. Stanton on fossils from the Chico formation.

Washburne (Chester)—Continued.

2. The distribution of placer gold in Oregon.

Oreg. Univ., Bull., new ser., vol. 1, no. 4, pp. 18-19, 1904.

3. Beach gold and its source.

Oreg. Univ., Bull., new ser., vol. 1, no. 4, pp. 19-21, 1904.
Describes the occurrence of gold in the sands of the coast of Oregon and discusses its source.

Washington (Henry Stephens).

1. The foyaite-ijolite series of Magnet Cove [Arkansas]; a chemical study in differentiation. I.

Jour. Geol., vol. 9, pp. 607-622, 1901.
Comprises a study of the chemical composition of several rock types and a discussion of their relations.

2. The foyaite-ijolite series of Magnet Cove [Arkansas]; a chemical study in differentiation. II.

Jour. Geol., vol. 9, pp. 645-670, 3 figs., 1901.
Describes the petrographic characters of the rocks and compares them with similar rocks from other regions. Discusses differentiation in laccolithic magmas.

3. The rocks of Lake Winnepesaukee, New Hampshire.

Abstract: Am. Geol., vol. 27, p. 44, 1901.
Contains brief notes on the rocks.

4. A chemical study of the glaucophane schists.

Am. Jour. Sci., 4th ser., vol. 11, pp. 35-59, 1901.
Describes the microscopic and chemical characters of these schists from several foreign countries and from western United States.

5. Igneous rocks from eastern Siberia.

Am. Jour. Sci., 4th ser., vol. 13, pp. 175-184, 1 fig., 1902.
Compares the characters of some of these rocks with similar rocks occurring in this country.

6. Chemical analyses of igneous rocks published from 1884 to 1900, with a critical discussion of the character and use of analyses.

U. S. Geol. Surv., Professional Paper no. 14, 495 pp., 1903.
Discusses character of chemical analyses of igneous rocks, the construction and nomenclature of the new quantitative classification and its correlation with the qualitative system, and methods of calculation employed, and gives tables embracing nearly all published analyses of igneous rocks, arranged according to the new system.
NOTE.—These chemical analyses have not been separately listed in the index of this bibliography.

7. The calculation of center-points in the quantitative classification of igneous rocks.

Abstract: Science, new ser., vol. 17, p. 668, 1903.

8. The quantitative distribution of rock magmas.

Abstract: Eng. & Mg. Jour., vol. 75, p. 153, 1903; Geol. Soc. Am., Bull., vol. 14, p. 533, 1904.

9. The superior analyses of igneous rocks from Roth's Tabellen, 1869 to 1884, arranged according to the quantitative system of classification.

U. S. Geol. Surv., Professional Paper no. 28, 68 pp., 1904.
NOTE.—The analyses in this paper have not been listed in the index of this bibliography.

10. Manual of the chemical analysis of rocks.

New York, John Wiley & Sons. 183 pp., 1904.
Describes fully methods of analysis of rocks.

Washington (Henry S.), **Cross** (Whitman), **Iddings** (Joseph P.), **Pirsson** (Louis V.) and.

1. A quantitative chemico-mineralogical classification and nomenclature of igneous rocks.

See **Cross** (W.) and others, 1.

2. Quantitative classification of igneous rocks.

See **Cross** (W.) and others, 2.

Washington (H. S.), **Pirsson** (L. V.) and.

1. Contributions to the geology of New Hampshire. I. Geology of the Belknap Mountains.

See **Pirsson** (L. V.) and **Washington** (H. S.), 1.

Watson (Lawrence W.).

1. Prince Edward Island.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 206–208, 1902.
Describes the author's field work in this area.

2. Francis Bain, geologist.

Can. Roy. Soc., Proc. & Trans., 2d ser., vol. 9, sect. 4, pp. 135–142, 1903.
Includes a list of his papers.

Watson (R. Lind).

1. Auriferous deposits of Wreck Bay, Jordan River, and other localities of Vancouver Island [Canada].

Mines & Minerals, vol. 21, pp. 488–489, 1 fig., 1901.
Describes placers of the region.

Watson (Thomas Leonard).

1. The granitic rocks of Georgia and their relationships.

Am. Geol., vol. 27, pp. 199–225, 8 pls., 1901.
Describes the microscopic and chemical and mineralogic characters of the varieties of granite and discusses the evidence of their intrusive origin.

2. The Georgia bauxite deposits; their chemical constituents and genesis.

Am. Geol., vol. 28, pp. 25–45, 1 pl., 1901.
Describes the general geology of the bauxite area and the occurrence, geologic position, and chemical composition of the ore and discusses its origin.

3. On the origin of the phenocrysts in the porphyritic granites of Georgia.

Jour. Geol., vol. 9, pp. 97–122, 6 figs., 1901.
Describes the characters of the granites of the several areas studied, their chemical composition, and the genetic relationship of phenocryst to groundmass.

4. Weathering of granitic rocks of Georgia.

Geol. Soc. Am., Bull., vol. 12, pp. 93–108, 6 pls., 1901.
Describes the megascopic, microscopic, and chemical characters of the granite of the State and the phenomena of their weathering.

5. On the occurrence of aplite, pegmatite, and tourmaline bunches in the Stone Mountain granite of Georgia.

Jour. Geol., vol. 10, pp. 186–193, 2 pls., 1902; Denison Univ., Sci. Lab., Bull., vol. 12, pp. 17–24, 2 pls., 1902.

6. Copper-bearing rocks of Virgilina copper district, Virginia and North Carolina.

Geol. Soc. Am., Bull., vol. 13, pp. 353–376, 3 pls., 1 fig., 1902; Denison Univ., Sci. Lab., Bull., vol. 12, pp. 97–127, 3 pls., 1 fig., 1903.
Reviews previous work and describes the occurrence, petrographic characters, and composition of igneous rocks, and the occurrence and character of the deposits of copper ores.

7. On the occurrence of uranophane in Georgia.

Am. Jour. Sci., 4th ser., vol. 13, pp. 464–466, 1902; Denison Univ., Sci. Lab., Bull., vol. 12, pp. 25–28, 1902.
Describes its occurrence and chemical character.

8. A preliminary report on a part of the granites and gneisses of Georgia.

Ga. Geol. Surv., Bull. no. 9-A, 367 pp., 32 pls., 1902.
Discusses geological age, mode of occurrence, origin, and distribution of granites in Georgia and eastern United States, their chemical and lithologic characteristics, and gives chemical analyses. The geography and physiography of the Georgia portion of the Piedmont Plateau are described.

9. Geological relations of the manganese ore deposits of Georgia.

Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 207–253, 970–973, 20 figs., 1904; Denison Univ., Sci. Lab., Bull., vol. 12, art. 9, pp. 147–198, 20 figs., 1904.
Describes the stratigraphy and geologic structure and the character and occurrence of the manganese ores of the Paleozoic and crystalline rocks of northern Georgia, and discusses the origin of the ore deposits.

Watson (Thomas Leonard)—Continued.

10. The yellow ocher deposits of the Cartersville district, Bartow County, Georgia.

Am. Inst. Mg. Engrs., Trans., vol. 34, pp. 643-666, 8 figs., 1904; Denison Univ., Sci. Lab., Bull. vol. 12, art. 10, pp. 199-221, 3 pls., 2 figs., 1904.

Gives an account of the geology and topography of the district and describes the occurrence, composition, and mining of the ocher deposits.

11. The Seminole copper deposit of Georgia.

U. S. Geol. Surv., Bull. no. 225, pp. 182-186, 1904.

Describes the general geology, structural features, and the character and occurrence of the copper ores.

12. A preliminary report on the bauxite deposits of Georgia.

Ga. Geol. Surv., Bull. no. 11, 169 pp., 12 pls., 3 figs., and map, 1904.

Describes the general geology of the bauxite region of Georgia, the character, occurrence, and origin of bauxite deposits, and the mining operations.

13. Structural relations of the granites of North Carolina.

Abstract: Science, new ser., vol. 19, p. 526, 1904.

14. The leopardite (quartz porphyry) of North Carolina.

Jour. Geol., vol. 12, pp. 215-224, 4 figs., 1904; Denison Univ., Sci. Lab., Bull., vol. 12, art. 11, pp. 223-230, 2 pls., 1904.

Describes occurrence, megascopic and microscopic characters, and chemical composition.

15. Orbicular gabbro-diorite from Davie County, North Carolina.

Jour. Geol., vol. 12, pp. 294-303, 2 figs., 1904.

Describes the occurrence and the megascopic and microscopic characters.

16. Granites of North Carolina.

Jour. Geol., vol. 12, pp. 373-407, 7 figs., 1904.

Describes types of granite occurring in North Carolina, their lithologic characters, structural features, and geographic distribution in the State.

17. Lead and zinc deposits of Virginia.

Va. Geol. Surv., Geol. Ser., Bull. no. 1, 156 pp., 14 pls., 27 figs., 1905.

Describes the stratigraphy and geologic structure of the Great Valley of Virginia, and the occurrence, relations, and character of lead and zinc deposits, and discusses the origin of the ores.

Weatherbe (D'Arcy).

1. Recent developments with the calyx drill in the Nictaux iron field [Nova Scotia].

Nova Scotia Inst. Sci., Trans., vol. 10, pp. 350-360, 2 pls., 1902.

Contains notes on the geology of the area.

2. Boring machines.

Nova Scotia, Dept. Mines, Rept. for 1903, pp. 69-82, 1904.

Contains records of strata passed through in borings in Nova Scotia.

Weatherby (W. J.)

1. The Mogollon range, New Mexico.

Mines & Minerals, vol. 22, pp. 97-101, 4 figs., 1901.

Describes the general geology and mineral resources of the region.

Weaver (Charles E.).

1. Contribution to the paleontology of the Martinez group.

Cal. Univ., Dept. Geol., Bull., vol. 4, pp. 101-123, 2 pls., 1905.

Gives a discussion of the geographical distribution, stratigraphic relations, and correlations of the Martinez group of the California Eocene formations, followed by systematic descriptions of its fossils.

Webster (Arthur).

1. Geology of the west coast of Vancouver Island.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 52-74, 1903.

Describes observations upon the physical features, general geology, and economic resources of the region.

Webster (Clement L.).

1. Description of a new genus and species of gastropod from the Hackberry group of Iowa.

Iowa Nat., vol. 1, pp. 39-40, 1905.

Webster (Clement L.)—Continued.

2. On some species of fossils from the Hackberry group of Iowa.

Iowa Nat., vol. 1, pp. 58–59, 1905.

3. Contributions to the paleontology of the Iowa Devonian.

Iowa Nat., vol. 1, pp. 70–71, 1905.

4. Preliminary observations on some of the constituent elements of the glacial drift of northern Iowa.

Iowa Nat., vol. 1, pp. 82–83, 1 fig., 1905.

Weed (Walter Harvey).

1. The enrichment of gold and silver veins.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 426–448, 9 figs., 1901.

Discusses the genesis of rich ore bodies occurring near ground water level and of those found in deep mine workings and the chemical reactions which have taken place during the process of ore deposition. Describes the author's observations and those of other geologists in various mines.

2. Types of copper deposits in the southern United States.

Am. Inst. Mg. Engrs., Trans., vol. 30, pp. 449–504, 22 figs., 1901.

Describes the character and occurrence of copper ores in certain districts, and discusses relations of the ores of the regions with these type deposits.

3. Notes on the Carolina gold deposits.

Eng. & Mg. Jour., vol. 72, p. 494, 1901.

Brief notes on the character of the ores.

4. The El Paso tin deposits [Texas].

U. S. Geol. Surv., Bull. no. 178, pp. 1–15, 1 pl., 4 figs., 1901.

Describes the general geology of the region and the occurrence and character of the ore-bearing veins.

5. Geology and ore deposits of the Elkhorn mining district, Jefferson County, Montana.

U. S. Geol. Surv., 22d Ann. Rept., pt. 2, pp. 399–510, 20 pls., 7 figs., 1901.

Describes history of mining operations in this district, the character and occurrence of igneous and metamorphic rocks and strata of Algonkian, Cambrian, Devonian, Carboniferous, and Mesozoic age, and discusses the general geologic structure, relations of the rock masses, the character, occurrence, mode of formation, and commercial development of the ore bodies.

6. Influence of country rock on mineral veins.

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 634–653, 8 figs., 1902.

Discusses origin of certain ore deposits.

7. [Discussion of "The origin of ore deposits."]

Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 959–962, 1902.

8. Notes on certain mines in the States of Chihuahua, Sinaloa, and Sonora, Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 396–443, 28 figs., 1902.

Contains notes on the geology of these States, and the character and occurrence of the ores.

9. Notes on a section across the Sierra Madre Occidental of Chihuahua and Sinaloa, Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 32, pp. 444–458, 1 pl. (sections), 1902.

Contains observations on the geology and petrology of the region.

10. Recent development of southern copper deposits.

Eng. & Mg. Jour., vol. 74, pp. 80–81, 1902.

11. Contact metamorphic and other ore deposits near igneous contacts.

Eng. & Mg. Jour., vol. 74, p. 513, 1902.

12. The Cananea copper deposits, Mexico.

Eng. & Mg. Jour., vol. 74, pp. 744–745, 4 figs., 1902.

13. Geological sketch of the Hot Springs district, Arkansas.

57th Cong., 1st Sess., Sen. Doc. no. 282, Washington, pp. 79–94, 10 pls., 1902.

Describes location, topography, and general geology of the region, and the source, character, and geologic relations of the hot springs, and discusses the origin of their heat.

Weed (Walter Harvey)—Continued.

14. Gold mines of the Marysville district, Montana.

U. S. Geol. Surv., Bull. no. 213, pp. 88–89, 1903.

Gives a brief history of the development of the field, its geological features, and the occurrence of the ore bodies.

15. Tin deposits at El Paso, Tex.

U. S. Geol. Surv., Bull. no. 213, pp. 99–102, 1903.

Describes briefly the geologic structure and formation of the Franklin Mountains, the character and occurrence of the ores, and the mining developments.

16. Ore deposits at Butte, Mont.

U. S. Geol. Surv., Bull. no. 213, pp. 170–180, 1903.

Describes the mining development of the region, the character and occurrence of the rocks and structural features of the district, and the character, occurrence, and origin of the ore deposits and the vein systems.

17. Copper deposits of the Appalachian States.

U. S. Geol. Surv., Bull. no. 213, pp. 181–185, 1903.

Describes the occurrence of deposits of copper ores in New Jersey, Maryland, Virginia, North Carolina, and Tennessee.

18. Copper deposits of New Jersey.

N. J. Geol. Surv., Ann. Rept. for 1902, pp. 125–139, 1903.

Describes the occurrence, character, and structural conditions of the copper ores and the mining operations, and discusses the origin of the ores.

19. Ore deposits near igneous contacts.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 715–746, 1 fig., 1903.

Gives a genetic classification of ore deposits, discusses formation of ores in contact zones, and especially the origin of contact metamorphic deposits.

20. Ore deposition and vein enrichment by ascending hot waters.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 747–754, 1903.

21. Secondary enrichment at Cripple Creek [Colorado].

Eng. & Mg. Jour., vol. 75, pp. 553–554, 1 fig., 1903.

22. Cross vein ore shoots and fractures.

Eng. & Mg. Jour., vol. 76, p. 193, 1903.

Describes vein structure and discusses its origin.

23. The Cananea ore deposits [Mexico].

Eng. & Mg. Jour., vol. 76, p. 383, 1903.

Gives observations upon the geology and the occurrence of the copper-ore deposits.

24. [Classification of ore deposits.]

Abstract: Science, new ser., vol. 17, pp. 273–274, 1903.

25. Gypsum deposits in Montana.

U. S. Geol. Surv., Bull. no. 223, pp. 74–75, 1904.

Describes character, occurrence, and geologic relations of gypsum deposits in Montana.

26. Copper deposits in Georgia.

U. S. Geol. Surv., Bull. no. 225, pp. 180–181, 1904.

Describes occurrence and character of copper ores.

27. The Griggstown, N. J., copper deposit.

U. S. Geol. Surv., Bull. no. 225, pp. 187–189, 1904.

Describes the general geology and the occurrence and character of the copper-ore deposits.

28. Notes on the copper mines of Vermont.

U. S. Geol. Surv., Bull. no. 225, pp. 190–199, 1904.

Describes the general geology, the character and occurrence of the copper-ore deposits, and the mining developments.

29. Original native gold in igneous rocks.

Eng. & Mg. Jour., vol. 77, pp. 440–441, 1904.

Weed (Walter Harvey)—Continued.

30. Occurrence and distribution of copper in the United States.

Mg. Mag., vol. 10, pp. 185-193, 1 pl., 10 figs., 1904.
Describes the occurrence, formation, and geologic relation of copper ores in various parts of the United States.

31. Dilation fissures and their contained ores.

Abstract: Science, new ser., vol. 20, p. 761, 1904.

32. The Great Flat at Butte, Montana.

Am. Geol., vol. 35, pp. 129-130, 1905.
A brief note on physiographic features of this region.

33. Cement resources of Montana.

U. S. Geol. Surv., Bull. no. 243, pp. 227-228, 1905.
Describes the occurrence and character of limestones suitable for cement manufacture.

34. Copper mines near Havana, Cuba.

Eng. & Mg. Jour., vol. 79, pp. 176-177, 1905.
Describes the occurrence and character of copper-ore deposits in Cuba.

35. Notes on the gold veins near Great Falls, Maryland.

U. S. Geol. Surv., Bull. no. 260, pp. 128-131, 1905.
Describes the character and occurrence of veins containing gold ore, and the conditions in which it is found.

36. The copper production of the United States.

U. S. Geol. Surv., Bull. no. 260, pp. 211-216, 1 fig., 1905.
Discusses production and consumption of copper, and the character, occurrence, and production of copper ores in the United States.

37. The copper deposits of the eastern United States.

U. S. Geol. Surv., Bull. no. 260, pp. 217-220, 1905.
Describes the occurrence and character of copper-ore deposits of the Appalachian region, particularly those of Virginia and Tennessee.

38. Economic value of hot springs and hot-spring deposits.

U. S. Geol. Surv., Bull. no. 260, pp. 598-604, 1905.
Describes general uses of hot springs, and particularly the limonite and travertine deposits of the Anaconda hot springs and the gypsum veins and waters of Hunters Hot Springs, Montana.

39. Notes on certain hot springs of the southern United States.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 145, pp. 185-206, 3 figs., 1905.
Includes notes on the geologic relations of the thermal waters of Meriwether County, Georgia, and of Hot Springs, Arkansas.

Weed (Walter Harvey) and **Pirsson** (L. V.).

1. Geology of the Shonkin Sag and Palisade Butte laccoliths in the Highwood Mountains of Montana.

Am. Jour. Sci., 4th ser., vol. 12, pp. 1-17, 10 figs., 1901.
Describes the physiography of the region, the occurrence and character of the laccoliths, and the chemical characters of the shonkinite and syenite.

2. Missourite, a new leucite rock from the Highwood Mountains of Montana.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 457-466, 1901. (From Am. Jour. Sci., 4th ser., vol. 2, pp. 315-323, 1896.)

Weeks (Fred Boughton).

1. An occurrence of tungsten ore in eastern Nevada.

U. S. Geol. Surv., 21st Ann. Rept., pt. 6, pp. 319-320, 1901. Abstract: Eng. and Mg. Jour., vol. 72, pp. 8-9, 1901.

2. Gold-bearing quartzites of eastern Nevada.

Abstract: Science, new ser., vol. 15, p. 546, 1902.

3. Bibliography of North American geology, paleontology, petrology, and mineralogy for the years 1892-1900, inclusive.

U. S. Geol. Surv., Bull. no. 188, 717 pp., 1902.

Weeks (Fred Boughton)—Continued.

4. Index to North American geology, paleontology, petrology, and mineralogy for the years 1892–1900, inclusive.
   U. S. Geol. Surv., Bull. no. 189, 337 pp., 1902.

5. North American geologic formation names: bibliography, synonymy, and distribution.
   U. S. Geol. Surv., Bull. no. 191, 448 pp., 1902.

6. Bibliography and index of North American geology, paleontology, petrology, and mineralogy for the year 1901.
   U. S. Geol. Surv., Bull. no. 203, 144 pp., 1902.

7. Bibliography and index of North American geology, paleontology, petrology, and mineralogy for the year 1902.
   U. S. Geol. Surv., Bull. no. 221, 200 pp., 1903.

8. Tungsten ore in eastern Nevada.
   U. S. Geol. Surv., Bull. no. 213, p. 103, 1903.
   Describes the character and occurrence of hübnerite in the Snake Mountains, Nevada.

9. Occurrence of Paleozoic rocks in the southern portion of the Great Basin region.
   Abstract: Science, new ser., vol. 17, p. 26, 1903.
   Describes briefly the occurrence and character of pre-Cambrian, Cambrian, Silurian, Devonian, and Carboniferous strata and the general geologic structure.

10. Bibliography and index of North American geology, paleontology, petrology, and mineralogy for the year 1903.
    U. S. Geol. Surv., Bull. no. 240, 243 pp., 1904.

11. Notes on the wells, springs, and general water resources of New York.
    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 102, pp. 169–206, 1904.

12. Underground waters of eastern United States: New York.
    U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 114, pp. 82–92, 1 pl., 1905.
    Describes briefly the general geology of the State and its water resources, particularly the underground waters and the springs.

15. Bibliography and index of North American geology, paleontology, petrology, and mineralogy for the year 1904.
    U. S. Geol. Surv., Bull. no. 271, 218 pp., 1905.

Weidman (Samuel).

1. The pre-Potsdam peneplain of the pre-Cambrian of north-central Wisconsin.
   Jour. Geol., vol. 11, pp. 289–313, 1 pl. and 8 figs., 1903.
   Describes physiographic features and general structure of the peneplain, and discusses its formation, evidences as to its age, and its subsequent history.

2. Note on the amphibole hudsonite previously called a pyroxene.
   Am. Jour. Sci., 4th ser., vol. 15, pp. 227–232, 2 figs., 1903.
   Describes microscopic and chemical characters.

3. Preliminary report on the soils and agricultural conditions of north central Wisconsin.
   Wis. Geol. & Nat. Hist. Surv., Bull. no. 11, 68 pp., 10 pls., 1903.
   Describes topography, general geology, water supply, and character and origin of soil formations.

4. Widespread occurrence of fayalite in certain igneous rocks of central Wisconsin.
   Jour. Geol., vol. 12, pp. 551–561, 3 figs., 1904.
   Describes the occurrence in Wisconsin, character, chemical composition, and relations to associated rocks, and discusses the origin and occurrences elsewhere of fayalite.

5. The Baraboo iron-bearing district of Wisconsin.
   Wis. Geol. & Nat. Hist. Surv., Bull. no. 13, 190 pp., 23 pls. (includ. geol. map in pocket), 1904.
   Describes the occurrence, megascopic and microscopic characters, and geologic relations of pre-Cambrian igneous rocks and sedimentary strata, and gives a general account of Cambrian and Ordovician sedimentary rocks and Glacial drift deposits, and discusses the ground water and the occurrence, character, and origin of the iron-ore deposits.

Weidman (Samuel)—Continued.

6. Iron ores of Wisconsin, with special reference to the Baraboo district.

   Wis. Engineer, vol. 9, pp. 31–45, 3 figs., 1904. Abstract: Eng. & Mg. Jour., vol. 79, pp. 610–612, 1905.

   Describes the character, occurrence, and geologic relations of the iron-ore deposits of Wisconsin and the geology of the Baraboo Range.

Weller (Stuart).

1. Correlation of the Kinderhook formations of southwestern Missouri.

   Jour. Geol., vol. 9, pp. 130–148, 1901.

   Reviews recent correlation of these strata and describes the occurrence and faunas of the several formations which make up the Kinderhook group.

2. Kinderhook faunal studies. III. The faunas of beds no. 3 to no. 7 at Burlington, Iowa.

   St. Louis Acad. Sci., Trans., vol. 11, pp. 147–214, 9 pls., 1901.

   Describes species collected from the various beds and discusses the correlations.

3. A preliminary report on the Paleozoic formations of the Kittatinny Valley in New Jersey.

   N. J. Geol. Surv., Ann. Rept. for 1900, pp. 1–8, 1901.

   Describes the character and occurrence of the subdivisions of the Cambrian and Ordovician strata in New Jersey.

4. The composition, origin, and relationship of the Corniferous fauna in the Appalachian province in North America.

   Jour. Geol., vol. 10, pp. 423–432, 1902.

   Presents a comparative list of Corniferous and Oriskany faunas, describes the distribution and relations of these faunas, and discusses the origin of the Corniferous fauna.

5. Crotalocrinus cora (Hall).

   Jour. Geol., vol. 10, pp. 532–534, 1 pl., 1902.

   Describes material from the Niagara group and gives the synonymy of Crotalocrinus cora.

6. The Paleozoic faunas [of New Jersey].

   N. J. Geol. Surv., Rept. on Paleont., vol. 3, 462 pp., 53 pls., 1903.

   Describes the Paleozoic formations of New Jersey, gives lists of their included fossils, and discusses the characteristics of the faunas and their correlation with those of other areas. Gives systematic descriptions and figures of the fossils of the several formations described.

7. The classification of the Upper Cretaceous formations and faunas of New Jersey.

   Jour. Geol,, vol. 13, pp. 71–84, 1905; N. J. Geol. Surv., Ann. Rept. for 1904, pp. 145–159, 1905.

   Discusses previous classifications of the Cretaceous strata of New Jersey and their correlations and the faunas of the various beds.

8. A fossil starfish from the Cretaceous of Wyoming.

   Jour. Geol., vol. 13, pp. 238–256, 3 figs., 1905.

9. Paraphorhynchus, a new genus of Kinderhook Brachiopoda.

   St. Louis Acad. Sci., Trans., vol. 15, pp. 259–264, 1 pl., 7 figs., 1905.

10. The fauna of the Cliffwood clays.

    N. J. Geol. Surv., Ann. Rept. for 1904, pp. 133–144, 1 pl., 1905; Jour. Geol., vol. 13, pp. 324–337, 6 figs., 1905.

    Describes the occurrence of the fossils, gives notes upon them and descriptions of the new species, a table showing distribution, and an analysis of the fauna and comparison with other faunas.

11. The northern and southern Kinderhook faunas.

    Jour. Geol., vol. 13, pp. 617–634, 1905.

12. Classification of the upper Cretaceous formations of New Jersey.

    Abstract: Am. Geol., vol. 36, pp. 176–177, 1905.

13. Fauna of the Cliffwood clays.

    Abstract: Am. Geol., vol. 35, p. 179, 1905.

Weller (Stuart), **Kümmel** (Henry B.) and.

1. Paleozoic limestones of Kittatinny Valley, New Jersey.

   See ***Kümmel*** *(H. B.)* **and Weller** (S.), 1.

Weller (Stuart), **Kümmel** (Henry B.) and—Continued.

2. The rocks of the Green Pond Mountain region.

See **Kümmel** (H. B.) and **Weller** (S.), 2.

Weller (Stuart), **Smith** (James Perrin) and.

1. Prodromites, a new ammonite genus from the Lower Carboniferous.

See **Smith** (J. P.) and **Weller** (Stuart), 1.

Wells (Horace L.).

1. Sperrylite, a new mineral.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 151-156, 1901. (From Am. Jour. Sci., vol. 37, pp. 67-70, 1889.)

2. On the composition of pollucite and its occurrence at Hebron, Me.

Yale Bicentennial publications. Cont. to Mineral. and Petrog., pp. 183-192, 1901. (From Am. Jour. Sci., vol. 41, pp. 213-220, 1891.)

Wells (H. L.) and **Penfield** (S. L.).

1. On a new occurrence of sperrylite.

Am. Jour. Sci., 4th ser., vol. 13, pp. 95-96, 1902.
Describes occurrence in platiniferous copper ore from Wyoming.

Wells (J. Walter).

1. Arsenic in Ontario.

Ontario Bureau of Mines, Rept. for 1902, pp. 101-122, 4 pls., 1902.
Describes distribution, manufacture, production, and uses of arsenic.

2. Molybdenite—its occurrence, concentration, and uses.

Can. Mg. Rev., vol. 22, pp. 113-118, 4 figs., 1903; Can. Mg. Inst., Jour., vol. 6, pp. 47-65, 4 figs., 1904.

3. Preliminary report on the raw materials, manufacture, and uses of hydraulic cements in Manitoba.

Can., Dept. of the Interior, Mines Branch, Ottawa, 1905. 70 pp., 7 pls.

4. Preliminary report on the industrial value of the clays and shales of Manitoba.

Can., Dept. of the Interior, Mines Branch, Ottawa, 1905. 41 pp., 8 pls.

5. Preliminary report on the limestones and the lime industry of Manitoba.

Can., Dept. of the Interior, Mines Branch, Ottawa, 1905. 68 pp., 8 pls.

Wells (W. E.).

1. The topography and geology of Clifton Gorge.

Ohio Nat., vol. 4, pp. 75-79, 2 figs., 1904.

Wendeborn (B. A.).

1. Die Tätigkeit heisser Quellen in den Gängen von Wedekind, Nevada, V. S. N.-A.

Berg-und hüttenm. Zeit., Jahrg. 63, pp. 265-266, 1904.
Discusses the ore deposits and their formation by the agency of heated water.

2. Die Quecksilberablagerungen in Oregon.

Berg-und hütten. Zeit., Jahrg. 63, pp. 274-277, 1904.
Describes occurrence, character, and geologic relations of quicksilver-ore deposits in Oregon.

Wenstrom (Olof).

1. Mineral deposits of Santiago, Cuba. [In discussion of paper of Harrison Souder.]

Am. Inst. Mg. Engrs., Trans., vol. 35, pp. 1008-1010, 1905.
Contains observations on the geologic structure of the copper deposits.

Westgate (Lewis G.).

1. The Twin Lakes glaciated area, Colorado.

Jour. Geol., vol. 13, pp. 285-312, 14 figs., 1905.
Describes the pre-Glacial topography of the upper Arkansas Valley, the various Glacial features of the Twin Lakes region, the Glacial erosion, and the post-Glacial changes, and discusses mountain form and its origin.

Wheeler (George D.).

1. Zinc in Crittenden County, Kentucky.

Eng. & Mg. Jour., vol. 74, pp. 413-414, 3 figs., 1902.

Wheeler (H. A.).

1. Notes on the source of the southeast Missouri lead.

   Eng. & Mg. Jour., vol. 77, pp. 517-518, 1904.

   Discusses the origin of the lead-ore deposits of this region.

Wheelock (Charles E.).

1. The Oriskany sandstone.

   Onondaga Acad. Sci., Proc., vol. 1, pp. 39-44, 1903.

   Describes distribution, character, and fossil contents of the Oriskany sandstone in Onondaga County, N. Y.

2. [Overthrust faults in central New York.]

   Abstract: Science, new ser., vol. 22, p. 673, 1905.

Whitaker (Milton C.).

1. An olivinite dike of the Magnolia district [Colorado] and the associated picrotitanite.

   Colo. Sci. Soc., Proc., vol. 6, pp. 104-119 [1902].

   Describes the occurrence, the megascopic and microscopic characters, and composition of olivinite, and the characters and composition of the associated picrotitanite.

Whitbeck (R. H.).

1. The pre-Glacial course of the middle portion of the Genesee River [New York].

   Am. Geog. Soc., Bull., vol. 34, pp. 32-44, 9 figs., 1902.

   Contains notes on the physiography and discusses the evidences regarding the pre-Glacial course of this river.

White (Charles A.).

1. The ancestral origin of the North American Unionidæ, or fresh-water mussels.

   Smith. Misc. Coll., vol. 48 (Quart. Issue, vol. 3, pt. 1), pp. 75-88, 1905.

2. The relation of phylogenesis to historical geology.

   Science, new ser., vol. 22, pp. 105-113, 1 fig., 1905.

   Discusses the bearing of certain paleontologic facts upon the origin of species.

White (Charles Henry).

1. The Appalachian River versus a Tertiary trans-Appalachian River in eastern Tennessee.

   Jour. Geol., vol. 12, pp. 34-39, 1904.

   Discusses the evidences for the drainage system of the southern Appalachian region in Cretaceous and Tertiary time.

2. Autophytography: A process of plant fossilization.

   Am. Jour. Sci., 4th ser., vol. 19, pp. 231-236, 5 figs., 1905.

   Discusses figures of plants made by them upon rocks by their coloring matters and the various evidences of existence of plant life in past geological ages.

White (David).

1. Two new species of Algæ from the Upper Silurian of Indiana.

   U. S. Nat. Mus., Proc., vol. 24, pp. 265-270, 3 pls., 1901.

2. Age of the coals at Tipton, Blair County, Pennsylvania.

   Geol. Soc. Am., Bull., vol. 12, pp. 473-477, 1901.

   Describes the occurrence, character, and structure of the strata associated with the coals and discusses their age as indicated by the fossil flora

3. Mr. Lacoe's relation to science.

   Wyoming Hist. & Geol. Soc., Proc. & Coll., vol. 6, pp. 55-60, 1901.

   Gives an account of his geologic and paleontologic labors

4. The Canadian species of the genus Whittleseya and their systematic relations.

   Ottawa Nat., vol. 15, pp. 98-110, 1 pl., 1901.

   Describes the occurrence, relation, systematic position, and characters of the species.

5. Some paleobotanical aspects of the Upper Paleozoic in Nova Scotia.

   Can. Rec. Sci., vol. 8, pp. 271-280, 1901.

   Discusses the bearing of the paleobotanical data on the age of certain beds in Nova Scotia.

White (David)—Continued.

6. Description of a fossil Alga from the Chemung of New York, with remarks on the genus Haliserites Sternberg.
   N. Y. State Mus., Bull. no. 52, pp. 593–605, 2 pls., 1902.
   Describes Thamnocladus clarkei, n. gen. et sp.
7. The bituminous coal field of Maryland.
   U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 201–214, 1902.
   Describes area, structure, and development of the field, and character, occurrence, and production of the coal beds.
8. Stratigraphy versus paleontology in Nova Scotia.
   Science, new ser., vol. 16, pp. 232–235, 1902.
   Discusses the age and evidences therefor of certain beds in the region of the Bay of Fundy.
9. Memoir of Ralph Dupuy Lacoe.
   Geol. Soc. Am., Bull. vol. 13, pp. 509–515, 1903.
   Includes a list of publications.
10. Summary of the fossil plants recorded from the upper Carboniferous and Permian formations of Kansas.
    U. S. Geol. Surv., Bull. no. 211, pp. 85–117, 1903.
11. Permian elements in the Dunkard flora.
    Abstract: Science, new ser., vol. 17, p. 238, 1903; Geol. Soc. Am., Bull., vol. 14, pp. 538–542, 1903.
12. An anthracite coal field three and a half hours west of Washington.
    Abstract: Science, new ser., vol. 17, p. 387, 1903.
    Describes observations upon the geology and age of the Sleepy Creek Mountain coal basin of West Virginia.
13. Age of the Mercer group.
    Abstract: Science, new ser., vol. 17, p. 942, 1903.
14. Deposition of the Appalachian Pottsville.
    Geol. Soc. Am., Bull., vol. 15, pp. 267–282, 1 pl., 1904.
    Describes character and occurrence of Carboniferous deposits of Pottsville age in the Appalachian region, and the extent, figure, and general characteristics of the basin in which the sedimentation took place, and sketches the geologic history of the Appalachian region in Pottsville time.
15. Notes on the deposition of the Appalachian Pottsville.
    Abstract: Science, new ser., vol. 19, pp. 24, 532, 1904.
16. A new seed-bearing fern.
    Abstract: Science, new ser., vol. 20, p. 840, 1904.
17. The seeds of Aneimites.
    Smith. Misc. Coll., vol. 47 (Quart. Issue, vol. 2, pt. 3[illegible] 322–331, 2 pls., 1904.
18. The geology of the Perry basin in southeaste[illegible]ine: Paleontology.
    U. S. Geol. Surv., Professional Paper no. 35, pp. 3[illegible]pls., 1905.
    Gives systematic descriptions of Devonian plant[illegible]ns.
19. Fossil plants of the group Cycadofilices.
    Smith. Misc. Coll., vol. 47 (Quart. Issue, vol. 2, [illegible]), pp. 377–390, 3 pls., 1905.
20. [The time element in stratigraphy and c[illegible]lation.]
    Abstract: Science, new ser., vol. 21, p. 585, 19[illegible]
21. Fossil plants of the group Cycadofilices
    Abstract: Science, new ser., vol. 21, p. 664, [illegible]5.
22. The occurrence of glacial epochs in Paleozoic time.
    Abstract: Science, new ser., vol. 22, p. 3[illegible], 1905.
23. The age of the Wise and Harlan formations of southwestern Virginia.
    Abstract: Science, new ser., vol. 22, pp. 335–336, 1905.
24. The American range of the Cycadofilices.
    Abstract: Intern. Geog. Cong., Eighth. Rept., p. 616, 1905.

White (David) and **Campbell** (Marius R.).

1. The bituminous coal field of Pennsylvania.

   U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 127-200, 5 figs., 1902.

   Describes extent, geologic structure and development of the field, character, occurrence and productiveness of the coal beds, gives chemical analyses of the coals, and discusses their economic value.

White (David), **Campbell** (Marius R.), and **Haseltine** (Robert M.).

1. The northern Appalachian coal field.

   U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 119-226, 2 pls., 6 figs., 1902.

White (D.), **Smith** (G. O.) and.

1. The geology of the Perry basin in southeastern Maine.

   See **Smith** (G. O) and **White** (D.), 1.

White (I. C.).

1. Second edition of the geological map of West Virginia.

   Am. Geol., vol. 28, pp. 328-329, 1901.

   Gives a brief description of the map.

2. Geology of West Virginia. [Paper read before the International Mining Congress, Boise, Idaho, June, 1901.]

   Mines & Minerals, vol. 22, pp. 153-155, 1901.

   Describes briefly the character and succession of the sedimentary strata of the State.

3. The geology of West Virginia.

   Int. Mg. Cong., 4th session, Proc., pp. 56-61, 1901.

   Presents a summary of the geologic history of the State.

4. Geological horizon of the Kanawha black flint.

   Geol. Soc. Am., Bull., vol. 13, pp. 119-126, 1902.

   Reviews previous investigations of the stratigraphic problems involved in this discussion, presents the author's recent observations, and discusses the relative value of stratigraphic and paleobotanic data.

5. List of fossils from the lower half of the Conemaugh formation near Morgantown, West Virginia, collected in 1870 by Dr. John J. Stevenson and identified by F. B. Meek.

   Am. Geol., vol. 30, pp. 211-214, 1902.

6. The geology of the Pittsburgh district.

   Abstract: Science, new ser., vol. 16, pp. 258-259, 1902.

   Gives a general sketch of the stratigraphy of the Coal Measures and of geological history during Quaternary times.

7. The Appalachian coal field [West Virginia].

   W. Va. Geol. Surv., vol. 2, pp. 81-716, 1903.

   Gives a detailed account of the Carboniferous system in West Virginia, including geologic sections, the extent, character, and geologic position of the various formations, and the character, occurrence, constitution, and fuel value of the coals.

8. Map showing occurrence of coal, oil, and gas in West Virginia.

   W. Va. Geol. Surv., 1904.

9. Petroleum and natural gas. Precise levels.

   W. Va. Geol. Surv., vol. 1A, 625 pp., 1904.

   Gives a historical sketch of the subject and describes the occurrence of petroleum and natural gas, including many records of borings and precise surface levels.

10. [Discussion of paper by R. Pearson on "The discovery of natural gas in Sussex, Heathfield district."]

    Inst. Mg. Engrs. [Engl.], Trans., vol. 26, pp. 506-507 [1904].

    A short note in regard to the occurrence of natural gas in the United States.

White (Mark).

1. Geology of the Glass Mountains of western Oklahoma.

   Kans. Acad. Sci., Trans., vol. 17, pp. 199-200. 1901

   Gives a section of the Cretaceous strata.

White (Theodore G.).

1. [Faunas of the Lower Ordovician at Glens Falls, N. Y.]

Abstract: Am. Geol., vol. 27, p. 43, 1901.
Gives results of the author's detailed studies.

Whiteaves (J. F.).

1. Description of a new species of Unio from the Cretaceous rocks of the Nanaimo coal field, Vancouver Island.

Ottawa Nat., vol. 14, pp. 177-179, 1 fig., 1901.

2. Note on a supposed new species of Lytoceras from the Cretaceous rocks at Denman Island in the Strait of Georgia [Canada].

Ottawa Nat., vol. 15, pp. 31-32, 1901.

3. On the genus Trimerella, with descriptions of two supposed new species of that genus from the Silurian rocks of Keewatin.

Ottawa Nat., vol. 16, pp. 139-143, 2 pls., 1902.

4. On the genus Panenka, Barrande, with a description of a second species of that genus from the Devonian rocks of Ontario.

Ottawa Nat., vol. 15, pp. 263-265, 1 pl., 1902.

5. Paleontology and zoology.

Can. Geol. Surv., Summ. Rept. for 1901, pp. 251-258, 1902.
Reports upon the paleontological work accomplished by the author's department.

6. Description of a fossil Cyrena from Alberta.

Ottawa Nat., vol. 16, pp. 231-233, 1 pl., 1903.

7. Crania of extinct bisons from the Klondike Creek gravels.

Ottawa Nat., vol. 16, pp. 240-241, 1903.

8. Description of a new species of Matheria, from the Trenton limestone at Ottawa.

Ottawa Nat., vol. 17, pp. 32-34, 1 fig., 1903; Geol. Mag., new ser., dec. 4. vol. 10, pp. 358-359, 1 fig., 1903.

9. Description of a species of Cardioceras from the Crows Nest coal fields.

Ottawa Nat., vol. 17, pp. 65-67, 1 fig., 1903.

10. Notes on some Canadian specimens of "Lituites undatus."

Ottawa Nat., vol. 17, pp. 119-122, 1903.
Reviews literature bearing on the subject and discusses the generic placement and relationships of Canadian specimens.

11. Additional notes on some Canadian specimens of "Lituites undatus."

Ottawa Nat., vol. 17, pp. 161-163, 1903.

12. Mesozoic fossils. Part 5. On some additional fossils from the Vancouver Cretaceous, with a revised list of the species therefrom.

Can. Geol. Surv., Mesozoic Fossils, vol. 1, pp. 309-415, 12 pls., 13 figs., 1903.

13. The Canadian species of Trocholites.

Ottawa Nat., vol. 18, pp. 13-18, 1904.

14. Description of a new genus and species of rugose corals from the Silurian rocks of Manitoba.

Ottawa Nat., vol. 18, pp. 113-114, 1904.

15. Uintacrinus and Hemiaster in the Vancouver Cretaceous.

Am. Jour. Sci., 4th ser., vol. 18, pp. 287-289, 1904.
Describes the occurrence and character of fossil echinoderms from Vancouver Island and gives a description of Hemiaster vancouverensis n. sp.

16. Paleontology and zoology.

Can. Geol. Surv., Summ. Rept. for 1903, pp. 201-205, 1904.
Outlines the work upon paleontology during 1903 of the Geological Survey of Canada.

Whiteaves (J. F.)—Continued.

17. Preliminary list of fossils from the Silurian (Upper Silurian) rocks of the Ekwan River, and Sutton Mill lakes, Keewatin, collected by D. B. Dowling in 1901, with descriptions of such species as appear to be new.

    Can. Geol. Surv., Ann. Rept., vol. 14, pt. F, pp. 38–59, 1904.

18. Paleontology and zoology.

    Can. Geol. Surv., Summ. Rept. for 1904, pp. 355–362, 1905.
    Gives a summary of the paleontological work for the year 1904 of the Geological Survey of Canada.

19. Notes on the apical end of the siphuncle in some Canadian Endoceratidæ, with descriptions of two supposed new species of Nanno.

    Am. Geol., vol. 35, pp. 23–30, 324, 2 pls., 1905.

Whitehead (Cabell), **Chatard** (T. M.) and.

1. An examination of the ores of the Republic Mine, Washington.

   See **Chatard** (T. M.) and **Whitehead** (C.), 1.

Whitfield (Robert Parr).

1. Note on a very fine example of Helicoceras stevensoni preserving the outer chamber.

   Am. Mus. Nat. Hist., Bull., vol. 14, p. 219, 1 pl., 1901.

2. Description of a new form of Myalina from the Coal Measures of Texas.

   Am. Mus. Nat. Hist., Bull., vol. 16, pp. 63–66, 2 figs., 1902.

3. Observations on and emended description of Heteroceras simplicostatum Whitfield.

   Am. Mus. Nat. Hist., Bull., vol. 16, pp. 67–72, 5 pls., 1902.

4. Description of a new Teredo-like shell from the Laramie group.

   Am. Mus. Nat. Hist., Bull., vol. 16, pp. 73–76, 2 pls., 1 fig., 1902.

5. Notice of a new genus of marine algæ, fossil in the Niagara shale.

   Am. Mus. Nat. Hist., Bull., vol. 16, pp. 399–400, 1 pl., 1902.
   Describes Palæodictyota n. gen.

6. Notice of six new species of Unios from the Laramie group.

   Am. Mus. Nat. Hist., Bull., vol. 19, pp. 483–487, 3 pls., 1903.

7. Observations on a remarkable specimen of Halysites and description of a new species of the genus.

   Am. Mus. Nat. Hist., Bull., vol. 19, pp. 489–490, 2 pls., 1903.

8. Notice of a new genus and species of Lower Carboniferous bryozoan.

   Am. Mus. Nat. Hist., Bull., vol. 20, p. 469, 1 pl., 1904.

9. Notice of a remarkable case of reproduction of lost parts shown on a fossil crinoid.

   Am. Mus. Nat. Hist., Bull., vol. 20, pp. 471–472, 2 pls., 1904.

10. Note on some worm (?) burrows in rocks of the Chemung group of New York.

    Am. Mus. Nat. Hist., Bull., vol. 20, pp. 473–474, 1 pl., 1904.

11. Notice of a new crinoid and a new mollusk from the Portage rocks of New York.

    Am. Mus. Nat. Hist., Bull., vol. 21, pp. 17–20, 4 pls., 1905.

12. Descriptions of new fossil sponges from the Hamilton group of Indiana.

    Am. Mus. Nat. Hist., Bull., vol. 21, pp. 297–300, 3 pls., 1905.

13. Notice of a new species of Fasciolaria from the Eocene green marls at Shark River, N. J.

    Am. Mus. Nat. Hist., Bull., vol. 21, pp. 301–303, 2 pls., 1905.

Whitfield (R. P.) assisted by **Hovey** (E. O.).

1. Catalogue of the types and figured specimens in the paleontological collection of the geological department, American Museum of Natural History; Lower Carboniferous to Pleistocene, inclusive.

   Am. Mus. Nat. Hist., Bull., vol. 11, pt. 4, pp. 357–500, 1901.

Whitlock (Herbert P.).

1. Guide to the mineralogic collections of the New York State Museum.

   N. Y. State Mus., Bull. 58, pp. 3-147, 39 pls., 249 figs., 11 models in pocket, 1902.
   Gives an outline of crystallography and describes characters, composition and occurrence of minerals.

2. List of New York mineral localities.

   N. Y. State Mus., Bull. 70, 108 pp., 1903.
   Tabulates the occurrence and geologic association of minerals found in the State of New York.

3. Minerals not commercially important.

   N. Y. State Mus., 57th Ann. Rept., vol. 1, pp. 180-192, 1905.
   Gives notes on the occurrence of various minerals in the State of New York.

4. Contributions from the mineralogic laboratory.

   N. Y. State Mus., Bull. 98, 36 pp., 7 pls., 1905.
   Describes the crystallographic and other characters of various minerals.

Whitney (Francis I.).

1. The new artesian water supply at Ithaca, N. Y.

   U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 110, pp. 55-64, 1 pl. and 1 fig., 1905.
   Includes notes upon the geology and records of the wells.

Whitney (Milton).

1. Report on the examination of some soils from Illinois.
   Ill. Bd. of World's Fair Commissioners, Rept., pp. 93-114, 1895.

2. Field operations of the Division of Soils, 1899.
   U. S. Dept. Agric., Rept. no. 64, Washington, 1900. 198 pp., 29 pls., 19 figs. and 11 maps (in pocket).
   Contains soil surveys of the following areas:
   - Colorado, Cache a la Poudre Valley, by Thomas H. Means, pp. 121-124.
   - Connecticut Valley, by Clarence W. Dorsey and J. A. Bonsteel, pp. 125-140.
   - New Mexico, Pecos Valley, by Thomas H. Means and Frank D. Gardner, pp. 36-76.
   - Utah, Salt Lake Valley, by Frank D. Gardner and John Stewart, pp. 77-114.
   - Utah, Sanpete, Cache, and Utah counties, by Thomas H. Means, pp. 115-120.

3. Field operations of the Division of Soils, 1900.

   U. S. Dept. Agric., Division of Soils (Second report), Washington, 1901. 473 pp., 51 pls., 47 figs. and 24 maps (in separate case).
   Contains soil surveys of the following areas:
   - Arizona, Salt River Valley, by Thomas H. Means, pp. 287-332.
   - California, Fresno, by Thomas H. Means and J. Garnett Holmes, pp. 333-384.
   - California, Santa Ana, by J. Garnett Holmes, pp. 385-412.
   - Maryland, Calvert County, by Jay A. Bonsteel and R. T. Avon Burke, pp. 147-171.
   - Maryland, Cecil County, by Clarence W. Dorsey and Jay A. Bonsteel, pp. 103-124.
   - Maryland, Kent County, by Jay A. Bonsteel, pp. 173-186.
   - Maryland, St. Mary County, by Jay A. Bonsteel, pp. 125-145.
   - North Carolina, Raleigh to Newbern, by William G. Smith, pp. 187-205.
   - Ohio, Montgomery County, by Clarence W. Dorsey and George N. Coffey, pp. 85-102.
   - Utah, Weber County, by Frank D. Gardner and Charles A. Jensen, pp. 207-242.
   - Utah, Sevier Valley, by Frank D. Gardner and Charles A. Jensen, pp. 243-285.

4. Field operations of the Bureau of Soils, 1901.

   U. S. Dept. Agric., Bureau of Soils (Third report), Washington, 1902. 647 pp., 96 pls., 25 figs. and 31 maps (in separate case).
   Contains soil surveys of the following areas:
   - California, Hanford area, by Macy H. Lapham and W. H. Heileman, pp. 447-480.
   - California, Imperial area, by Thomas H. Means and J. Garnett Holmes, pp. 587-606.
   - California, Lower Salinas Valley, by Macy H. Lapham, pp. 481-519.
   - California, San Gabriel area, by J. Garnett Holmes and Louis Mesmer, pp. 559-586.
   - California, Ventura area, by J. Garnett Holmes and Louis Mesmer, pp. 521-557.
   - Georgia, Cobb County, by R. T. Avon Burke and Herbert W. Marean, pp. 317-327.
   - Georgia, Covington area, by Herbert W. Marean, pp. 329-340.
   - Idaho, Boise area, by Charles A. Jensen and B. A. Olshausen, pp. 421-446.
   - Louisiana, Lake Charles area, by W. H. Heileman and Louis Mesmer, pp. 621-647.
   - Maryland, Harford County, by W. G. Smith and J. O. Martin, pp. 211-237.
   - Maryland, Prince George County, by Jay A. Bonsteel and party, pp. 173-210.

Whitney (Milton)—Continued.

4. Field operations of the Bureau of Soils, 1901—Continued.

Contains soil surveys of the following areas—Continued.
Michigan, Allegan County, by Elmer O. Fippin and Thomas D. Rice, pp. 93–124.
Mississippi, Yazoo area, by Jay A. Bonsteel and party, pp. 359–388.
New Jersey, Salem area, by Jay A. Bonsteel and F. W. Taylor, pp. 125–148.
New York, Westfield area, Chautauqua County, by R. T. Avon Burke and Herbert W. Marean, pp. 75–92.
North Carolina, Alamance County, by George N. Coffey and W. Edward Hearn, pp. 297–310.
North Carolina, Cary area, by George N. Coffey and W. Edward Hearn, pp. 311–315.
North Carolina, Statesville area, by Clarence W. Dorsey and party, pp. 273–295.
Pennsylvania, Lebanon area, by W. G. Smith and Frank Bennett, jr., pp. 149–171.
Texas, Willis area, Montgomery County, by J. O. Martin, pp. 607–619.
Virginia, Bedford area, by Charles N. Mooney, F. O. Martin, and Thomas A. Caine, pp. 239–257.
Virginia, Prince Edward area, by Charles N. Mooney and Thomas A. Caine, pp. 259–271.
Washington, Yakima area, by Charles A. Jensen and B. A. Olshausen, pp. 389–419.

5. Field operations of the Bureau of Soils, 1902.

U. S. Dept. Agric., Bureau of Soils (Fourth report), Washington, 1903. 842 pp., 60 pls., 25 figs. and 44 maps (in separate case).

Contains soil surveys of the following areas:
Alabama, Perry County, by R. T. Avon Burke and party, pp. 309–323.
Arizona, Yuma area, by J. Garnett Holmes, pp. 777–791.
Arkansas, Stuttgart area, by J. E. Lapham, pp. 611–622.
Colorado, Lower Arkansas Valley, by Macy H. Lapham and party, pp. 729–776.
Idaho, Lewiston area, by Louis Mesmer, pp. 689–709.
Illinois, Clay County, by George N. Coffey and party, in cooperation with the Illinois Experiment Station, pp. 533–548.
Illinois, Clinton County, by Jay A. Bonsteel and party, in cooperation with the Illinois Experiment Station, pp. 491–505.
Illinois, St. Clair County, by George N. Coffey and party, in cooperation with the Illinois Experiment Station, pp. 507–532.
Illinois, Tazewell County, by Jay A. Bonsteel and party, in cooperation with the Illinois Experiment Station, pp. 465–489.
Indiana, Posey County, by Herbert W. Marean, pp. 441–463.
Iowa, Dubuque area, by Elmer O. Fippin, pp. 571–592.
Kansas, Wichita area, by J. E. Lapham and B. A. Olshausen, pp. 623–642.
Kentucky, Union County, by Herbert W. Marean, pp. 425–440.
Mississippi, Smedes area, by William G. Smith and William T. Carter, jr., pp. 325–348.
Missouri, Howell County, by Elmer O. Fippin and J. L. Burgess, pp. 593–609.
Montana, Billings area, by Charles A. Jensen and N. P. Neill, pp. 665–687.
New Jersey, Trenton area, by R. T. Avon Burke and Henry J. Wilder, pp. 163–186.
New York, Bigflats area, by Louis Mesmer and W. Edward Hearn, pp. 125–142.
North Carolina, Hickory area, by Thomas A. Caine, pp. 239–258.
North Carolina, Mount Mitchell area, by Thomas A. Caine and A. W. Mangum, pp. 259–271.
North Dakota, Grand Forks area, by Charles A. Jensen and N. P. Neill, pp. 643–663.
Ohio, Columbus area, by William G. Smith, pp. 403–423.
Ohio, Toledo area, by William G. Smith, pp. 383–402.
Porto Rico, Arecibo to Ponce, by Clarence W. Dorsey, Louis Mesmer, and Thomas A. Caine, pp. 793–839.
South Carolina, Abbeville area, by F. W. Taylor and Thomas D. Rice, pp. 273–289.
South Carolina, Darlington area, by Thomas D. Rice and F. W. Taylor, pp. 291–307.
Texas, Brazoria area, by Frank Bennett, jr., and Grove B. Jones, pp. 349–364.
Texas, Vernon area, by J. E. Lapham and party, pp. 365–381.
Virginia, Albemarle area, by Charles N. Mooney and F. E. Bonsteel, pp. 187–238.
Washington, Walla Walla area, by J. Garnett Holmes, pp. 711–728.
Wisconsin, Janesville area, by Jay A. Bonsteel, pp. 549–570.

6. Field operations of the Bureau of Soils, 1903.

U. S. Dept. Agric., Bureau of Soils (Fifth report), Washington, 1904. 1310 pp., 6 pls., 61 figs. and 78 maps (in separate case).

Contains soil surveys of the following areas:
Alabama, Fort Payne area, by Grove B. Jones and M. E. Carr, pp. 355–371.
Alabama, Huntsville area, by Frank Bennett, jr., and A. M. Giffen, pp. 373–392.

Whitney (Milton)—Continued.

6. Field operations of the Bureau of Soils, 1903—Continued.

Contains soil surveys of the following areas—Continued.
Alabama, Mobile area, by R. T. Avon Burke and party, pp. 393–403.
Arizona, Solomonsville area, by Macy H. Lapham and N. P. Neill, pp. 1045–1070.
Arkansas, Miller County, by J. O. Martin and E. P. Carr, pp. 563–576.
California, Imperial area, by J. Garnett Holmes and party, pp. 1219–1248.
California, Indio area, by J. Garnett Holmes and party, pp. 1249–1262.
California, Los Angeles area, by Louis Mesmer, pp. 1263-1306.
California, San Jose area, by Macy H. Lapham, pp. 1183–1217.
Colorado, San Luis Valley, by J. Garnett Holmes, pp. 1099–1119.
Connecticut Valley, by Elmer O. Fippin, pp. 39–61.
Delaware, Dover area, by F. E. Bonsteel and O. L. Ayres, pp. 143–164.
Florida, Gadsden County, by Elmer O. Fippin and Aldert S. Root, pp. 331–353.
Georgia, Fort Valley area, by William G. Smith and William T. Carter, jr., pp. 317–330.
Idaho, Blackfoot area, by W. E. McLendon, pp. 1027–1044.
Illinois, Johnson County, by George N. Coffey and party, pp. 721–736.
Illinois, Knox County, by George N. Coffey and party, pp. 737–752.
Illinois, McLean County, by George N. Coffey and party, pp. 777–797.
Illinois, Sangamon County, by George N. Coffey and party, pp. 703–719.
Illinois, Winnebago County, by George N. Coffey and party, pp. 753–775.
Indiana, Madison County, by R. T. Avon Burke and La Mott Ruhlen, pp. 687–702.
Iowa, Cerro Gordo County, by Herbert W. Marean and Grove B. Jones, pp. 853–873.
Iowa, Story County, by Herbert W. Marean and Grove B. Jones, pp. 833–851.
Kansas, Parsons area, by J. A. Drake, pp. 891–909.
Kansas, Russell area, by A. W. Mangum and J. A. Drake, pp. 911–926.
Kentucky, Mason County, by R. T. Avon Burke, pp. 631–645.
Kentucky, Scott County, by R. T. Avon Burke, pp. 619–630.
Louisiana, Acadia Parish, by Thomas D. Rice and Lewis Griswold, pp. 461–485.
Louisiana, New Orleans area, by Thomas D. Rice and Lewis Griswold, pp. 439–459.
Louisiana, Ouachita Parish, by Thomas D. Rice, pp. 419–438.
Maryland, Worcester County, by F. E. Bonsteel and William T. Carter, jr., pp. 165–189.
Michigan, Pontiac area, by Henry J. Wilder and W. J. Geib, pp. 659–685.
Minnesota, Marshall area, by Henry J. Wilder, pp. 815–831.
Mississippi, McNeill area, by William G. Smith and William T. Carter, jr., pp. 405–418.
Missouri, Shelby County, by R. T. Avon Burke and La Mott Ruhlen, pp. 875–899.
Nebraska, Grand Island area, by W. Edward Hearn and James L. Burgess, pp. 927–945.
Nebraska, Stanton area, by W. Edward Hearn, pp. 947–962.
New York, Long Island area, by J. A. Bonsteel and party, pp. 91–128.
New York, Syracuse area, by F. E. Bonsteel and others, pp. 63–89.
North Carolina, Asheville area, by J. E. Lapham and F. N. Meeker, pp. 279–297.
North Carolina, Craven area, by William G. Smith and George N. Coffey, pp. 253–278.
North Dakota, Fargo area, by Thomas A. Caine, pp. 979–1003.
North Dakota, Jamestown area, by Thomas A. Caine and A. E. Kocher, pp. 1005–1026.
Ohio, Ashtabula area, by J. O. Martin and E. P. Carr, pp. 647–658.
Oregon, Baker City area, by Charles A. Jensen and W. W. Mackie, pp. 1151–1170.
Oregon, Salem area, by Charles A. Jensen, pp. 1171–1182.
Pennsylvania, Lockhaven area, by J. O. Martin, pp. 129–142.
South Carolina, Campobello area, by A. W. Mangum and Aldert S. Root, pp. 299–315.
South Dakota, Brookings area, by Frank Bennett, jr., pp. 963–977.
Tennessee, Davidson County, by William G. Smith and Hugh H. Bennett, pp. 605–617.
Tennessee, Pikeville area, by Henry G. Wilder and W. J. Geib, pp. 577–603.
Texas, Jacksonville area, by W. Edward Hearn and James L. Burgess, pp. 521–531.
Texas, Lufkin area, by W. Edward Hearn and party, pp. 501–510.
Texas, Nacogdoches area, by W. Edward Hearn and James L. Burgess, pp. 487–499.
Texas, Paris area, by Thomas A. Caine and A. E. Kocher, pp. 533–562.
Texas, Woodville area, by J. E. Lapham and party, pp. 511–520.
Utah, Provo area, by Alfred M. Sanchez, pp. 1121–1150.
Virginia, Leesburg area, by William T. Carter, jr., and W. S. Lyman, pp. 191–231.
Virginia, Norfolk area, by J. E. Lapham, pp. 233–252.
Wisconsin, Viroqua area, by William G. Smith, pp. 799–814.
Wyoming, Laramie area, by N. P. Neill and party, pp. 1071–1097.

Whittemore (Charles A.).

1. The sub-Carboniferous limestone exposure at Grand Rapids, Mich.

Mich. Acad. Sci., 1st Rept., pp. 62–65, 1900.
Describes the occurrence and character, and notes the fossils occurring therein.

Wiel (Samuel C.).

1. A Nevada ore deposit.

   Mg. & Sci. Press, vol. 88, pp. 330–331, 1904.

   Describes occurrence, character, and geologic relations of a deposit of manganese, and discusses its origin.

Wieland (G. R.).

1. A study of some American fossil Cycads. Part IV. On the microsporangiate fructification of Cycadeoidea.

   Am. Jour. Sci., 4th ser., vol. 11, pp. 423–436, 3 figs., 1901.

   Continues the description of the author's studies of the fructification of Cycadeoidea, which appeared in the American Journal of Science for March, 1899.

2. Notes on the Cretaceous turtles, Toxochelys and Archelon, with a classification of the marine Testudinata.

   Am. Jour. Sci., 4th ser., vol. 14, pp. 95–108, 2 figs., 1902.

3. Notes on the marine turtle Archelon: 1, on the structure of the carapace; 2, associated fossils.

   Am. Jour. Sci., 4th ser., vol. 15, pp. 211–216, 1 fig., 1903.

   Describes the rib series of Archelon ischyros from new material.

4. Polar climate in time the major factor in the evolution of plants and animals.

   Am. Jour. Sci., 4th ser., vol. 16, pp. 401–430, 1903.

5. Extent and progress of cycad investigation.

   Science, new ser., vol. 17, pp. 352–353, 1903.

6. Structure of the upper Cretaceous turtles of New Jersey: Adocus, Osteopygis, and Propleura.

   Am. Jour. Sci., 4th ser., vol. 17, pp. 112–132, 9 pls., 7 figs., 1904.

7. Structure of the upper Cretaceous turtles of New Jersey: Lytoloma.

   Am. Jour. Sci., 4th ser., vol. 18, pp. 183–196, 4 pls., 6 figs., 1904.

8. The proembryo of the Bennettiteae.

   Am. Jour. Sci., 4th ser., vol. 18, pp. 445–447, 1 pl., 1904.

9. On the foliage of the Jurassic cycads of the genus Cycadella.

   U. S. Geol. Surv., Mon., vol. 48, pp. 198–203, 1905.

10. Jurassic cycads from the Black Hills. Field notes.

    U. S. Geol. Surv., Mon., vol. 48, pp. 205–207, 1905.

11. Notes on the stratigraphy and paleontology of the Black Hills rim.

    U. S. Geol. Surv., Mon., vol. 48, pp. 317–326, 1905.

12. A new Niobrara Taxochelys.

    Am. Jour. Sci., 4th ser., vol. 20, pp. 325–343, 9 figs., 1905.

13. Structure of the upper Cretaceous turtles of New Jersey: Agomphus.

    Am. Jour. Sci., 4th ser., vol. 20, pp. 430–444, 9 figs., 1905.

Wigmore (H. L.).

1. Report of an examination of the coal deposits of Polillo Island, P. I.

   U. S. War Dept., Bureau of Insular Affairs, Washington, pp. 65–71, 1 map, 1905.

2. Report of examination of coal deposits on the Batan military reservation, Batan Island, P. I.

   U. S. War Dept., Bureau of Insular Affairs, Washington, pp. 1–33, 1905.

Wilcox (Walter D.).

1. Recent exploration in the Canadian Rockies.

   Nat. Geog. Mag., vol. 13, pp. 151–168, 13 figs., pp. 185–200, 9 figs., 1902.

   Contains notes on the physiography of the region.

Wilder (Frank A.).

1. The lignite deposits of North Dakota.

   Eng. & Mg. Jour., vol. 74, pp. 674–675, 3 figs., 1902.

Wilder (Frank A.)—Continued.

2. The lignite coal fields of North Dakota.

N. Dak. Geol. Surv., 2d Bien. Rept., pp. 33-55, 5 pls., 1902.
Describes character and occurrence of the deposits of lignite.

3. Geology of Webster County [Iowa].

Iowa Geol. Surv., vol. 12, Ann. Rept. for 1901, pp. 65-191, 4 pls., 26 figs., geol. map, 1902.
Describes physiographic features and geology of the county, and discusses the origin, geologic and geographic occurrence and utilization of gypsum deposits and other economic products.

4. The age and origin of the gypsum of central Iowa.

Jour. Geol., vol. 11, pp. 723-748, 3 figs., 1903.
Describes occurrence, character, and geologic position of the gypsum deposits, and discusses their age and mode of formation.

5. Possible origin for the lignites of North Dakota.

Iowa Acad. Sci., Proc. for 1902, vol. 10, pp. 129-135, 1903.
Describes occurrence and characters of lignite beds in North Dakota and Montana and offers an explanation of their origin.

6. Gypsum deposits in Iowa.

U. S. Geol. Surv., Bull. no. 223, pp. 49-52, 1 pl., 1 fig., 1904.
Discusses character, occurrence, economic development, and geologic relations of the gypsum deposits in this State.

7. The Laramie and Fort Union beds in North Dakota.

Jour. Geol., vol. 12, pp. 290-293, 1904.
Discusses the evidences observed in field work in regard to the relations of the Fort Union beds and the Laramie.

8. The lignite of North Dakota and its relation to irrigation.

U. S. Geol. Surv., Water-Supply and Irrigation Paper no. 117, 59 pp., 8 pls., 5 figs., 1905.
Discusses the occurrence and character of the lignite of North Dakota, and its use in irrigation work.

9. Thirteenth annual report of the State geologist.

Iowa Geol. Surv., vol. 15, Ann. Rept., 1904, pp. 3-11, 1 pl., 1905.
Outlines the work of the Iowa geological survey during the year 1904.

10. The lignite on the Missouri, Heart and Cannon Ball rivers and its relation to irrigation.

N. Dak. Geol. Surv., 3d Bien. Rept., pp. 9-40, 7 pls., 1904.
Contains notes on the character and occurrence of lignite beds.

Willard (Daniel E.).

1. The story of the prairies, or, the landscape geology of North Dakota. Third edition.

Printed for the author by Rand, McNally & Company, Chicago, 1902. 256 pp., 83 figs.
Describes the physiography and geology of North Dakota.

Willard (D. E.), **Hall** (C. M.) and.

1. Casselton-Fargo folio, North Dakota-Minnesota.

See **Hall** (C. M.) and **Willard** (D. E.), 1.

Willcox (O. W.).

1. On certain aspects of the loess of southwestern Iowa.

Jour. Geol., vol. 12, pp. 716-721, 1 fig., 1904.
Describes the character and occurrence of loess deposits in this region differing in color and character, and discusses their origin.

2. The so-called alkali spots of the younger drift-sheets.

Jour. Geol., vol. 13, pp. 259-263, 2 figs., 1905.
Discusses the occurrence and origin of the so-called alkali spots found upon the surface of fields underlain by Glacial drift in Iowa, Wisconsin, Illinois, and Indiana.

Willey (Day Allen).

1. New Texan oil deposits.

Sci. Am., vol. 90, p. 96, illus., 1904.
Contains notes on the occurrence of petroleum deposits.

Willey (Day Allen)—Continued.

2. The oil fields of the West.

Sci. Am., vol. 93, pp. 484, 4 figs., 1905.

A discussion of the production of petroleum in the United States.

Williams (E. G.).

1. The manganese industry of the Department of Panama, Republic of Colombia.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 197-234, 9 figs., 1903.

Discusses the character and occurrence of the manganese-ore deposits and the mining operations.

Williams (Edward H., jr.).

1. The alleged Parker channel [Pennsylvania.]

Geol. Soc. Am., Bull., vol. 12, p. 463, 1901.

Describes abandoned channel of Allegheny River.

2. Kansas glaciation and its effects on the river system of northern Pennsylvania.

Wyoming [Pa.] Hist. & Geol. Soc., Proc. & Coll., vol. 7, pp. 21-28, 11 figs., 1902.

Discusses drainage modifications produced by the ice of the Glacial period.

3. Connection by precise leveling between the Atlantic and Pacific oceans.

Science, new ser., vol. 21, p. 862, 1905.

Williams (Henry Shaler).

1. The discrimination of time values in geology.

Jour. Geol., vol. 9, pp. 570-585, 1901.

Discusses the criteria upon which the classification of strata should depend and proposes a plan of a biochronic classification and nomenclature.

2. Points involved in the Siluro-Devonian boundary question.

Abstract: Geol. Soc. Am., Bull., vol. 12, pp. 472-473, 1901.

Gives brief summary of questions in dispute.

3. Fossil faunas and their use in correlating geological formations.

Am. Jour. Sci., 4th ser., vol. 13, pp. 417-432, 1902.

Discusses methods of employing fossil faunas in correlating definite formations and their limitations.

4. Shifting of faunas as a problem of stratigraphic geology.

Geol. Soc. Am., Bull., vol. 14, pp. 177-190, 1 pl., 1903.

Discusses relationships of faunas in different types of sediments in the Devonian of New York, Pennsylvania, and Ohio and their shifting, and gives rules for the use of fossils in stratigraphy.

5. The correlation of geological faunas, a contribution to Devonian paleontology.

U. S. Geol. Surv., Bull. no. 210, 147 pp., 1903.

Discusses faunas of upper Devonian, with especial reference to the statistics of the species the evidences for the shiftings of faunas and the consequences thereof, and the value and use of fossils in correlation work.

6. Note on the Devonian fossils [of the Bisbee quadrangle, Arizona].

U. S. Geol. Surv., Professional Paper no. 21, pp. 35-42, 1 pl., 1904.

Gives a list of fossils identified with their occurrence by localities. A few of the more characteristic are figured.

7. Preliminary report on the classification of the rocks of the Watkins Glen (30′) quadrangle (U. S. Geological Survey).

Science, new ser., vol. 19, pp. 234-236, 1904.

Discusses some of the results obtained and the methods, largely paleontologic, used in the stratigraphic work.

8. Bearing of some new paleontologic facts on nomenclature and classification of sedimentary formations.

Geol. Soc. Am., Bull., vol. 16, pp. 137-150, 1905.

Williams (Henry Shaler) and **Kindle** (Edward M.).

1. Contributions to Devonian paleontology, 1903.

U. S. Geol. Surv., Bull. no. 244, 144 pp., 6 pls., and 3 figs., 1905.

Describes sections of Devonian and Mississippian rocks of Virginia, West Virginia, Kentucky, and Pennsylvania, gives lists of the species identified in their faunules, and discusses the correlation, range, environment, etc., of these faunules.

Williams (Ira A.).

1. Geology of Jasper County [Iowa].

   Iowa Geol. Surv., vol. 15, Ann. Rept., 1905, pp. 277-367, 1 pl., 12 figs., 2 maps, 1905.
   Describes physiographic features, the occurrence, character, and relations of Carboniferous strata and Pleistocene deposits, and the economic resources.

2. The comparative accuracy of the methods for determining the percentages of the several components of an igneous rock.

   Am. Geol., vol. 35, pp. 34-46, 1905.

Williams (I. A.), **Beyer** (S. W.) and.

1. Technology of clays.

   See **Beyer** (S. W.) and **Williams** (I. A.), 1.

2. The geology of clays.

   See **Beyer** (S. W.) and **Williams** (I. A.), 2.

Willimott (C. W.).

1. Minerals of the Ottawa Valley.

   Can. Geol. Surv., Summ. Rept., for 1904, pp. 229-232, 1905.
   Describes the occurrence and characters of lepidolite, serpentine, and fuchsite from the Ottawa Valley.

2. Notes on molybdenite.

   Can. Geol. Surv., Min. Res. of Can., Bull. on Molybdenum and Tungsten, pp. 15-16, 1904.

Willis (Bailey).

1. Paleozoic Appalachia, or the history of Maryland during Paleozoic time.

   Md. Geol. Surv., vol. 4, pp. 23-93, 12 pls., 1 fig., 1902. [Advance separate, 1900.]
   Describes action of dynamic forces upon land surfaces, and history of orographic movements and geographic changes during Paleozoic time affecting the area in which Maryland is situated.

2. Individuals of stratigraphic classification.

   Jour. Geol., vol. 9, pp. 557-569, 1901.
   Discusses the discrimination of formations by lithologic criteria and the determination of faunal and time divisions.

3. Thomas Benton Brooks.

   Science, new ser., vol. 13, pp. 460-462, 1901.
   Gives an account of his life and geologic researches.

4. Oil of the northern Rocky Mountains.

   Eng. and Mg. Jour., vol. 72, pp. 782-784, 3 figs., 1901.
   Describes the stratigraphy and structure of the region and the probable occurrence of oil.

5. New York City folio, New York-New Jersey.

   See **Merrill** (F. J. H.) and others, 1.

6. Stratigraphy and structure, Lewis and Livingston ranges, Montana.

   Geol. Soc. Am., Bull., vol. 13, pp. 305-352, 8 pls. (incl. map), 6 figs., 1902.
   Describes the physiography, the occurrence and character of the Algonkian, Carboniferous, Cretaceous and Pleistocene formations, and the geologic structure of the region.

7. Structure of the front range, northern Rocky Mountains, Montana.

   Abstract: Science, new ser., vol. 15, pp. 86-87, 1902.

8. Physiography of the northern Rocky Mountains.

   Abstract: Science, new ser., vol. 15, p. 87, 1902.

9. Conditions of overthrust in the northern Rockies.

   Abstract: Science, new ser., vol. 15, p. 507, 1902.

10. Mountain growths of the Great Plains.

    Abstract: Science, new ser., vol. 16, pp. 1028-1029, 1902.

11. Physiography and deformation of the Wenatchee-Chelan District, Cascade Range [Washington].

    U. S. Geol. Surv., Professional Paper no. 19, pp. 41-97, 13 pls., 2 figs., 1903.
    Describes physiographic features of the region and their history.

Willis (Bailey)—Continued.

12. Ames Knob, North Haven, Maine.

Geol. Soc. Am., Bull., vol. 14, pp. 201-206, 2 pls., 1903; Am. Geol., vol. 31, p. 159, 1903.
Describes physiographic and glacial evidences showing submergence and re-elevation.

13. Post-Tertiary deformation of the Cascade Range.

Abstract: Science, new ser., vol. 17, p. 740, 1903.

14. Überschiebungen in den Vereinigten Staaten von Nordamerika.

Congr. géol. intern., Compte rendu IX. Sess., pp. 529-540, 2 figs., 1904.
Defines various kinds of overthrust, and discusses their origin and time relations.

15. Mountain growth and mountain structure.

Abstract: Am. Geol., vol. 35, pp. 52-53, 1905; Science, new ser., vol. 21, p. 219, 1905.

Willis (Bailey), **Smith** (George Otis) and.

1. The Clealum iron-ores, Washington.

See **Smith** (G. O.) and **Willis** (B.), 1.

Williston (S. W.).

1. Cretaceous fishes, Selachians and Pycnodonts.

Kans. Univ. Geol. Surv., vol. 6, pp. 237-256, 10 pls., 1900.

2. The dinosaurian genus Creosaurus, Marsh.

Am. Jour. Sci., 4th ser., vol. 11, pp. 111-114, 1 fig., 1901.
Reviews previous descriptions and describes new material.

3. A new turtle from the Kansas Cretaceous.

Kans. Acad. Sci., Trans., vol. 17, pp. 195-199, 5 pls., 1901.
Describes Porthochelys laticeps, n. gen. et sp.

4. On the hind limb of Protostega.

Am. Jour. Sci., 4th ser., vol. 13, pp. 276-278, 1 fig., 1902.

5. An arrow-head found with bones of Bison occidentalis Lucas in western Kansas.

Am. Geol., vol. 30, pp. 313-315, 1 fig., 1902.
Gives a section of the locality where the bones were found.

6. On the skull of Nyctodactylus, an Upper Cretaceous Pterodactyl.

Jour. Geol., vol. 10, pp. 520-534, 2 pls., 1902.
Describes new material from western Kansas.

7. Winged reptiles.

Pop. Sci. Monthly, vol. 60, pp. 314-322, 6 figs., 1902.

8. On the skeleton of Nyctodactylus with restoration.

Am. Jour. Anat., vol. 1, pp. 297-305, 1 fig., 1902.

9. Restoration of Dolichorhyncops osborni, a new Cretaceous plesiosaur.

Kans. Univ., Sci. Bull., vol. 1, pp. 241-244, 1 pl., 1902.

10. Notes on some new or little-known extinct reptiles.

Kans. Univ., Sci. Bull., vol. 1, pp. 247-254, 2 pls., 1902.

11. On certain homoplastic characters in aquatic air-breathing vertebrates.

Kans. Univ., Sci. Bull., vol. 1, pp. 259-266, 1902.
Discussion mainly of fossil forms.

12. A fossil man from Kansas.

Science, new ser., vol. 16, pp. 195-196, 1902.
Describes occurrence of human remains in loess near Lansing, Kansas.

13. The Laramie Cretaceous of Wyoming.

Science, new ser., vol. 16, pp. 952-953, 1902.
Discusses age of the Laramie deposits of Converse County, Wyoming, and gives notes on the fossils found in them.

14. North American plesiosaurs. Part I.

Field Col. Mus., Geol. Ser., vol. 2, pp. 1-77, 29 pls., 13 figs., 1903.

Williston (S. W.)—Continued.

15. On the osteology of Nyctosaurus (Nyctodactylus), with notes on American pterosaurs.

Field Col. Mus., Geol. Ser., vol. 2, pp. 125-163, 5 pls., 2 figs., 1903.

16. On the structure of the plesiosaurian skull.

Science, new ser., vol. 17, p. 980, 1903.

17. Some osteological terms.

Science, new ser., vol. 18, pp. 829-830, 1903.

18. The fossil man of Lansing, Kansas.

Pop. Sci. Monthly, vol. 62, pp. 463-473, illus., 1903.
Describes the occurrence of the human remains and discusses the evidences of their age.

19. The relationships and habits of the Mosasaurs.

Jour. Geol., vol. 12, pp. 43-51, 1904.
Discusses taxonomy in the vertebrates, and the phylogeny, classification, and mode of life of extinct saurians.

20. Wilbur Clinton Knight.

Am. Geol., vol. 33; pp. 1-6, 1 pl. (por.), 1904.
Includes a bibliography of the scientific papers published by the subject of the sketch.

21. The fingers of pterodactyls.

Geol. Mag., dec. 5, vol. 1, pp. 59-60, 1904.

22. The stomach stones of the plesiosaurs.

Science, new ser., vol. 20, p. 565, 1904.

23. Notice of some new reptiles from the upper Trias of Wyoming.

Jour. Geol., vol. 12, pp. 688-697, 6 figs., 1904.

24. On the Lansing man.

Intern. Cong. Americanists, Proc. 13th Session, pp. 85-89, 1905; Am. Geol., vol. 35, pp. 342-346 1905.
Describes the discovery and mode of occurrence of the Lansing skeleton.

25. The Hallopus, Baptanodon, and Atlantosaurus beds of Marsh.

Jour. Geol., vol. 13, pp. 338-350, 1905.
Discusses the age of these beds in the light of the evidence given by vertebrate fossil remains.

26. A new armored dinosaur from the upper Cretaceous of Wyoming.

Science, new ser., vol. 22, pp. 503-504, 1905.

27. [Phylogeny and classification of the Reptilia.]

Abstract: Science, new ser., vol. 21, pp. 294-295, 1905.

28. [New locality for Triassic vertebrates in Wyoming.]

Abstract: Science, new ser., vol. 21, pp. 297-298, 1905.

Willmott (A. B.).

1. The Michipicoten Huronian area.

Am. Geol., vol. 28, pp. 14-19, 1 pl., 1901.
Describes the occurrence of the igneous and sedimentary rocks of the region and discusses the stratigraphic succession and age of the sediments.

2. The nomenclature of the Lake Superior formations.

Jour. Geol., vol. 10, pp. 67-76, 1902.
Discusses the use of names for the subdivisions of the Archean and Algonkian of the region.

3. The contact of the Archean and post-Archean in the region of the Great Lakes.

Jour. Geol., vol. 12, pp. 40-42, 1 pl., 1904.
Describes the character of the line of contact of the Archean and overlying formations in the Great Lakes region in Canada and discusses the origin of this character.

4. The exploration of the Ontario iron ranges.

Can. Mg. Rev., vol. 23, pp. 154-156, 1904; Can. Mg. Inst., Jour., vol. 7, pp. 257-269, 1904.
Describes the general geology of the iron ranges, the character of the rocks, and the occurrence of iron ore deposits.

Willmott (A. B.), **Coleman** (A. P.) and.

1. The Michipicoten iron ranges [Ontario].

   See **Coleman** (A. P.) and **Willmott** (A. B), 1.

2. The Michipicoten iron region [Ontario].

   See **Coleman** (A. P.) and **Willmott** (A. B.), 2.

Wilson (Alfred W. G.).

1. The Medford dike area [Massachusetts].

   Boston Soc. Nat. Hist., Proc., vol. 30, pp. 353–374, 4 pls., 1901.

   Describes the petrographic characters of the crystalline rocks and the glacial phenomena of the region. Includes a bibliography and geologic map.

2. Physical geology of central Ontario.

   Can. Inst., Trans., vol. 7, pp. 139–186, 8 pls., 10 figs., 4 maps, 1901.

   Describes the character of the pre-sedimentary floor of the region, the characters of the Paleozoic series, its post-Paleozoic history, and the glacial phenomena.

3. The country west of Nipigon Lake and River [Canada].

   Can. Geol. Surv., Summ. Rept. for 1901, pp. 94–103, 1902.

   Describes the author's observations upon the geology, topography, and economic resources of this region.

4. Some recent folds in the Lorraine shales [Ontario].

   Can. Rec. Sci., vol. 8, pp. 525–531, 4 pls., 1 fig., 1902.

   Describes the occurrence and origin of the local folds.

5. A geological reconnoissance about the headwaters of the Albany River [Canada].

   Can. Geol. Surv., Summ. Rept. for 1902, pp. 201–206, 1903.

   Gives observations upon the topography and geology of the region examined.

6. The Laurentian peneplain.

   Jour. Geol., vol. 11, pp. 615–669, 14 figs., 1903; McGill Univ., Papers from Dept. Geol., no. 15, 1903.

   Describes location, physiographic control, topographic and drainage features, and discusses the origin of the Laurentian peneplain and some of its features.

7. The theory of the formation of sedimentary deposits.

   Can. Rec. Sci., vol. 9, pp. 112–132, 4 figs., 1903; McGill Univ., Papers from the Dept. Geol., no. 16, 1904.

   Discusses the conditions and processes of sedimentation and their bearing upon the character and correlation of some Ordovician and Silurian formations of Canada.

8. Cuspate forelands along the Bay of Quinte [Ontario].

   Jour. Geol., vol. 12, pp. 106–132, 12 figs., 1904; McGill Univ., Papers from the Dept. of Geol., no 18, 1904.

   Describes physiographic features in this vicinity, and discusses the mode of their formation by wave action.

9. Trent River system and St. Lawrence outlet.

   Geol. Soc. Am., Bull., vol. 15, pp. 211–242, 6 pls., 1904.

   Describes physiographic features of the country east and northeast of Lake Ontario, and discusses their bearing upon the pre-Glacial drainage of that region.

10. Physiography of the Archean areas of Canada.

    Intern. Geog. Cong., Eighth, Rept., pp. 116–135, 3 pls. and 2 maps, 1905.

    Describes the physiographic character of the region, and discusses the origin of various features.

11. A forty-mile section of Pleistocene deposits north of Lake Ontario.

    Can. Inst., Trans., vol. 8, pp. 11–21, 2 pls., 1 fig., 1905.

    Describes the occurrence and character of Pleistocene deposits along the north shore of Lake Ontario.

Wilson (E. B.).

1. The theory of ore deposits applied to prospecting.

   Mines & Minerals, vol. 24, pp. 386–387, 527–529, 4 figs., 1904.

Wilson (Herbert M.).

1. Porto Rico; its topography and aspects.

Am. Geog. Soc., Bull., vol. 32, pp. 220-238, with map, 1900.
Describes physiography of the island.

Wilson (J. Howard).

1. The Pleistocene formations of Sankaty Head, Nantucket.

Jour. Geol., vol. 13, pp. 713-734, 12 figs., 1905.
Describes the position and character of the successive beds in a section at this point, gives a tabulated list of the fossils obtained, with notes on their occurrence elsewhere, and discusses the conditions under which the beds were formed.

Wilson (John D.).

1. Fauna of the Agoniatite limestone of Onondaga County, N. Y.

Onondaga Acad. Sci., Proc., vol. 1, pp. 84-88, 1903.
Describes the occurrence, character, and fossils of the Agoniatite limestone of the Marcellus shale in Onondaga County, N. Y.

Wilson (W. J.).

1. Western part of the Abitibi region [Canada].

Can. Geol. Surv., Summ. Rept. for 1901, pp. 115-128, 1902.
Describes the author's observations in this region.

2. Reconnaissance surveys of Four Rivers southwest of James Bay.

Can. Geol. Surv., Summ. Rept. for 1902, pp. 220-239, 1903.
Contains observations upon the geology of the region examined.

3. The Nagagami River and other branches of the Kenogami.

Can. Geol. Surv., Summ. Rept. for 1903, pp. 109-120, 1904.
Gives notes upon the geology of the region examined.

4. The Little Current and Drowning rivers, branches of the Albany, east of Lake Nipigon [Ontario].

Can. Geol. Surv., Summ. Rept. for 1904, pp. 164-173, 1905.
Includes observations on the geology of the region examined.

Winchell (Alexander N.).

1. Étude minéralogique et pétrographique des roches gabbroïques de l'État de Minnesota, États-Unis, et plus spécialement des anorthosites.

Paris, 1900. 164 pp., 9 pls., 23 figs. Abstract: Am. Jour. Sci., 4th ser., vol. 11, p. 89, 1901.

2. Note on certain copper minerals.

Am. Geol., vol. 28, pp. 244-246, 1901.
Describes occurrence of chalcopyrite and bornite at Butte, Mont.

3. Note on titaniferous pyroxene.

Am. Geol., vol. 31, pp. 309-310, 1903.
Discusses composition and optic angle.

4. [Discussion of paper by J. E. Spurr, "A consideration of igneous rocks and their segregation or differentiation as related to the occurrence of ores."]

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 1063-1064, 1903.
Discusses an example of ore concentration in Madison County, Montana.

Winchell (Horace V.).

1. The ore deposits of Monte Cristo, Washington.

Am. Geol., vol. 30, pp. 113-118, 1902.
Reviews a paper by J. E. Spurr.

2. Synthesis of chalcocite and its genesis at Butte, Montana.

Geol. Soc. Am., Bull., vol. 14, pp. 269-276, 1903; Eng. & Mg. Jour., vol. 75, pp. 782-784, 1903.
Discusses occurrence and experiments to determine origin of chalcocite.

3. The Mesabi iron range [Minnesota].

Eng. & Mg. Jour., vol. 76, pp. 343-344, 1903.
Discusses geologic work upon the Mesabi iron range.

Winchell (Horace V.)—Continued.

4. Butte [Idaho] copper veins.

Eng. & Mg. Jour., vol. 78, pp. 7-8, 1 fig., 1904.

Describes the general geologic structure and the character and occurrence of the copper-ore deposits.

5. Notes on Goldfield, Nevada.

Am. Geol., vol. 35, pp. 382-385, 1905.

Describes the location and character of the mining district, and the occurrence and character of the gold-ore deposits.

Winchell (Newton H.).

1. A new iron-bearing horizon in the Keewatin in Minnesota.

Lake Sup. Mg. Inst., Proc., vol. 5, pp. 46-48 [1898?].

Contains notes on the geology and occurrence of ore in this region.

2. Geological atlas with synoptical descriptions [Minnesota].

Minn. Geol. & Nat. Hist. Surv., Final Rept., vol. 6, 88 pls., 1901.

3. Glacial lakes of Minnesota.

Geol. Soc. Am., Bull., vol. 12, pp. 109-128, 1 pl., 1901.

Describes the retreat of the ice sheets and the occurrence of the several Glacial lakes of the region.

4. Edward Waller Claypole.

Am. Geol., vol. 28, pp. 247-248, 1901.

Gives a sketch of the life of Prof. Claypole.

5. The origin of Australian iron ores.

Am. Geol., vol. 28, pp. 248-250, 1901.

Reviews paper by J. B. Jaquet on "The iron-ore deposits of New South Wales," and compares them with certain deposits in the State of Washington.

6. Fundamental changes in the Archean and Algonkian, as understood by Prof. Van Hise, of the United States Geological Survey.

Am. Geol., vol. 28, pp. 385-388, 1901.

Reviews a recent paper by Prof. Van Hise.

7. Sketch of the iron ores of Minnesota.

Am. Geol., vol. 29, pp. 154-162, 1902; Int. Mg. Cong., 4th session, Proc., pp. 136-140, 1902.

Describes the general geology and the occurrence and origin of the iron ores.

8. The geology of the Mississippi Valley at Little Falls, Minnesota.

Memoirs of Explorations in the Basin of the Mississippi, vol. 5, Kakabikansing, pp. 89-104, 1902.

Describes occurrence and character of strata at this locality and sketches their geological history.

9. Regeneration of clastic feldspar.

Abstract: Science, new ser., vol. 15, p. 85, 1902.

10. The Monthly American Journal of Geology and Natural Science.

Am. Geol., vol. 30, pp. 62-64, 1902.

Gives an account of this publication issued in 1831-2.

11. The Sutton Mountain.

Am. Geol., vol. 30, pp. 118-120, 1902.

In discussing the geology of the region refers to an article by J. A. Dresser.

12. The Lansing [Kansas] skeleton.

Am. Geol., vol. 30, pp. 189-194, 1902.

Describes the deposits in which the skeleton was found and gives an estimate of its age.

13. Some results of the late Minnesota Geological Survey.

Am. Geol., vol. 31, pp. 246-253, 1903.

Gives a brief summary of the results of this survey.

Winchell (Newton H.)—Continued.

14. The Pleistocene geology of the Concannon farm, near Lansing, Kansas.

Am. Geol., vol. 31, pp. 263–308, 4 pls., 1903.

Summarizes and discusses Professor Chamberlain's paper on "The geologic relations of the human relics of Lansing, Kansas" (Jour. Geol., vol. 10, pp. 745–779, 1902), describes the general geologic relations and character of the deposits where the human remains were found, and discusses their age and mode of formation. Includes contributions by S. W. Williston, J. E. Todd, and G. Frederick Wright.

15. Regeneration of clastic feldspar.

Geol. Soc. Am., Bull., vol. 13, pp. 522–525, 1903.

Reviews previous literature on the subject and discusses three phases of the changes through which feldspars pass.

16. Was man in America in the Glacial period?

Geol. Soc. Am., Bull., vol. 14, pp. 133–152, 1 fig., 1903.

Describes conditions prevailing in North America during Tertiary times, discusses character of the pre-Glacial geest covering, the advent of the ice sheets, origin of the loess, and the occurrence and character of the Lansing skeleton.

17. Metamorphism of the Laurentian limestones of Canada.

Am. Geol., vol. 32, pp. 385–392, 1903.

A review of a paper by Louis Caryl Graton "On the petrographical relations of the Laurentian limestones and the granite in the township of Glamorgan, Haliburton County, Ontario" (Can. Rec. Sci., vol. 9, pp. 1–38, 1903).

18. Granite. Address at unveiling of the Coronado obelisk at Logan Grove, Kansas, Aug. 12, 1902.

Memoirs of Exploration in the Basin of the Mississippi, vol. 7, Kansas, pp. 87–91, 1903.

Includes a discussion of Archean geologic history and the origin of granite.

19. The evolution of climates.

Am. Geol., vol. 33, pp. 116–122, 1904.

States the fundamental ideas involved in the hypothesis of climate in Marsden Manson's "Evolution of Climates" (see Manson, 1) and discusses the objections which have been raised against it.

20. Where did life begin?

Am. Geol., vol. 33, pp. 185–189, 1904.

Reviews works by Wm. F. Warren and G. Hilton Scribner and statements of others regarding the origin of life in the north Polar regions and its distribution southward.

21. Peléliths.

Am. Geol., vol. 33, pp. 319–325, 8 figs., 1904.

Applies the term pelélith to massive-solid volcanic extrusions of the type of the recently formed cone of Mont Pelé and describes various examples of peléliths.

22. The colossal bridges of Utah.

Am. Geol., vol. 34, pp. 189–192, 1 fig., 1904.

Describes briefly these arches produced by erosion, situated in San Juan County, Utah.

23. The Baraboo iron ore.

Am. Geol., vol. 34, pp. 242–253, 1904.

Discusses a report by Dr. Weidman on the Baraboo iron-bearing district of Wisconsin.

24. The geology of the iron ores of Minnesota, U. S. A.

Australasia Geol. Soc., Trans., vol. 1, pp. 171–180, 1892.

Discusses the character and occurrence of the iron ores of Minnesota and the age and character of the rocks in which they occur.

25. Notes on the geology of the Hellgate and Big Blackfoot valleys, Montana.

Abstract: Geol. Soc. Am., Bull., vol. 15, pp. 576–578, 1904.

Gives a provisional general section of the rocks of the region and brief notes upon the stratification, geologic structure, and igneous rocks.

26. Note on the geology of the Hellgate Valley between Missoula and Elliston, and northward to Placid Lake, in Montana.

Abstract: Science, new ser., vol. 19, pp. 524–525, 1904.

Describes briefly the stratigraphy and general geology of the region.

Winchell (Newton H.)—Continued.

27. Deep wells as a source of water supply for Minneapolis.

Am. Geol., vol. 35, pp. 266-291, 4 pls., 1 fig., 1905.
Discusses the underground water resources of Minneapolis, Minnesota

28. Another meteorite in the Supreme Court.

Am. Geol., vol. 36, pp. 47-49, 1905.
Discusses the question of ownership of meteorites.

29. The Willamette meteorite.

Am. Geol., vol. 36, pp. 250-257, 1 pl., 1905.
Describes surface features of this meteorite and discusses their origin.

Winterton (J.).

1. The volcanic eruptions in Guatemala.

Sci. Am., vol. 89, p. 84, illus., 1903.

Withrow (James R.), **Hamilton** (S. Harbert) and.

1. The progress of mineralogy in 1899, an analytical catalogue of the contributions to science during the year.

See **Hamilton** (S. H.) and **Withrow** (J. R.), 1.

Wittman (Ernest).

1. The geological and topographical features of the city of Monterey, Nuevo Leon, Mexico, and its vicinity.

Am. Geol., vol. 35, pp. 171-176, 1905.

Wolff (John E.).

1. Leucite-tinguaite from Beemerville, New Jersey.

Harv. Coll., Mus. Comp. Zool., Bull., vol. 38, pp. 273-277, 1902.
Describes this rock and gives chemical analyses.

2. Zinc and manganese deposits of Franklin Furnace, N. J.

U. S. Geol. Surv., Bull. no. 213, pp. 214-217, 1903.
Describes the character, geologic occurrence, and origin of the zinc deposits.

3. Cambrian and pre-Cambrian of Hoosac Mountains, Massachusetts.

Abstract: Geol. Soc. Am., Bull., vol. 14, p. 564, 1904.

Wolff (John E.) and **Palache** (Charles).

1. Apatite from Minot, Maine.

Am. Acad. Arts & Sci., Proc., vol. 37, pp. 517-528, 1 pl., 1902; Zeitsch. für Kryst. u. Min., vol 36, pp. 438-448, 1 pl., 1902.
Describes occurrence, crystallography, chemical composition, and properties of a specimen from Maine.

Wood (Edgar).

1. Eruption of Mauna Loa, 1903.

Am. Geol., vol. 34, pp. 62-64, 1 fig., 1904.
Describes phenomena observed during an eruption of Mauna Loa in October, 1903.

Wood (Elvira).

1. Marcellus (Stafford) limestones of Lancaster, Erie County, N. Y.

N. Y. State Mus., Bull. no. 49, pp. 139-181, 1 pl., 1 fig., 1901.
Describes their stratigraphic relations and lithologic and faunal characters.

2. A new crinoid from the Hamilton of Charlestown, Indiana.

Am. Jour. Sci., 4th ser., vol. 12, pp. 297-300, 1 pl., 1 fig., 1901.
Describes Gennæocrinus carinatus n. sp.

3. On new and old middle Devonic crinoids.

Smith. Misc. Coll., vol. 47 (Quart. Issue, vol. 2, no. 1), pp. 56-84, 2 pls., 9 figs., 1904.

Wood (H. O.), **Palache** (Charles), and.

1. A crystallographic study of millerite.

See **Palache** (Charles) and **Wood** (H. O.), 1.

Wood (L. H.).

1. Report on the region between the Northern Pacific Railroad and Missouri River. Its topography, climate, vegetation, irrigation possibilities, and coal deposits.

   N. Dak. Geol. Surv., 3d Bien. Rept., pp. 41 125, 17 pls., 8 figs., 1904.

Woodbridge (Dwight E.).

1. The Mesabi iron ore range.

   Eng. & Mg. Jour., vol. 79, pp. 698–700, 1905.
   Discusses the geology of the Lake Superior iron region.

Woodman (J. Edmund).

1. Nomenclature of the gold-bearing metamorphic series of Nova Scotia.

   Am. Geol., vol. 33, pp. 364–370, 1901.
   Describes character and occurrence of certain geologic formations in southern Nova Scotia, discusses their nomenclature, and proposes new terms.

2. The sediments of the Meguma series of Nova Scotia.

   Am. Geol., vol. 34, pp. 13–34, 1904.
   Describes the occurrence and character and the geologic relations and history of the metamorphic formations of southern Nova Scotia.

3. Distribution of bedded leads in relation to mining policy.

   Nova Scotian Inst. Sci., Proc. and Trans., vol. 11, pp. 163–178, 1905.
   Discusses the structure of the gold fields of Nova Scotia and its relation to the mining industry.

4. Geology of the Moose River gold district, Halifax County, Nova Scotia.

   Nova Scotian Inst. Sci., Proc. & Trans., vol. 11, pp. 18–88, 18 pls., 1905.
   Describes the geologic structure of the area, and the character, occurrence, and relations of the folds and faults, and of the mineral veins.

Woodward (Henry).

1. The Canadian Rockies. Part I: On a collection of Middle Cambrian fossils obtained by Edward Whymper, esq., F. R. G. S., from Mount Stephen, British Columbia.

   Geol. Mag., new ser., dec. 4, vol. 9, pp. 502–505, 529–544, 1 pl. and 7 figs., 1902.
   Gives a geological section of Mount Stephen and describes fossils from this locality.

2. Note on some fragmentary remains of fossils from the upper part of Mount Noyes (Canadian Rockies).

   Geol. Mag., new ser., dec. 4, vol. 10, pp. 297–298 3 figs., 1903.

Woodward (R. S.) and others.

1. Report of advisory committee on geophysics.

   Carnegie Inst. Wash., Yearbook no. 1, 1902, pp. 26–70, 1903.
   Discusses problems of geophysics and methods of investigation.

Woodworth (Jay Backus).

1. Original micaceous cross-banding of strata by current action.

   Am. Geol., vol. 27, pp. 281-283, 2 figs., 1901.
   Describes the phenomena occurring in glacial sand of Massachusetts and refers to descriptions of somewhat similar occurrences.

2. Pleistocene geology of portions of Nassau County and Borough of Queens [New York].

   N. Y. State Mus., Bull. no. 48, pp. 618–670, 9 pls., 9 figs., 1901; N. Y. State Mus., 54th Ann. Rept., vol. 4, 1902.
   Describes the physiography, and character and occurrence of the Pleistocene strata of the region. Includes a summary of Glacial history and bibliography.

3. The history and conditions of mining in the Richmond coal-basin, Virginia.

   Am. Inst. Mg. Engrs., Trans., vol. 31, pp. 477–484, 2 figs. (geol. map and section), 1902.
   Describes geologic conditions in this coal field.

Woodworth (Jay Backus)—Continued.

4. The Atlantic coast Triassic coal field.

U. S. Geol. Surv., 22d Ann. Rept., pt. 3, pp. 25–53, 4 pls., 7 figs., 1902.
Describes extent, general geologic relations and structure of this coal field occupying parts of Virginia and North Carolina, the number, thickness and extent of the coal beds, and the character, composition and production of the coal.

5. Note on the elevated beaches of Cape Ann, Mass.

Harvard Coll., Mus. Comp. Zool., Bull., vol. 42, pp. 191–194, 1903.

6. On the sedentary impression of the animal whose trail is known as Climactichnites.

N. Y. State Mus., Bull. 69, pp. 959–966, 2 pls., 3 figs., 1903.
Describes occurrence and character of the trails known as Climactichnites and discusses their formation.

7. The Northumberland volcanic plug.

N. Y. State Mus., 55th Ann. Rept., pp. r17–r24, 5 pls., 3 figs., 1903.
Describes the occurrence, character and geologic relations of an igneous rock mass discovered near Schuylerville, New York, to which the name Stark's Knob is given.

8. The Brandon clays.

Vt. Geol. Surv., Rept. State Geol., IV, pp. 167–173, 1904.
Describes the fuel value, occurrence, and geologic relations of the lignites in the Brandon clays of Vermont, and discusses fossil fruits occurring in them.

9. Pleistocene geology of Mooers quadrangle, being a portion of Clinton County, including parts of the towns of Mooers, Champlain, Altona, Chazy, Dannemora, and Beekmantown, N. Y.

N. Y. State Mus., Bull. 83, pp. 3–60, 25 pls., 1905.
Describes in detail the character, occurrence, and relations of various Glacial deposits and and other Glacial phenomena, and discusses the presence of beaches and marine Pleistocene deposits and their origin.

10. Ancient water levels of the Champlain and Hudson valleys.

N. Y. State Mus., Bull. 84, 265 pp., 28 pls. and map (in pocket), 33 figs., 1905.
Describes the physiography of the Hudson and Champlain valleys, the occurrence and character of glacial deposits, and the Pleistocene history of the region.

Woolman (Lewis).

1. Artesian wells. [New Jersey.]

N. J. Geol. Surv., Ann. Rept. for 1900, pp. 103–171, 1901.
Gives sections of many artesian wells.

2. Artesian wells.

N. J. Geol. Surv., Ann. Rept. for 1901, pp. 53–128, 1902.
Contains records of wells and notes on the strata passed through.

3. Report on artesian wells [New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1902, pp. 61–95, 1903.

Woolsey (Lester H.).

1. Clays of the Ohio Valley in Pennsylvania.

U. S. Geol. Surv., Bull., no. 225, pp. 463–480, 1904.
Describes occurrence, character, and utilization of the clays of this region.

2. Extra-morainic pebbles in western Pennsylvania.

Abstract: Science, new ser., vol. 19, pp. 733, 1904.

3. Beaver folio, Pennsylvania.

U. S. Geol. Surv., Geol. Atlas of U. S., folio no. 134, 1905.
Describes the physiography, the occurrence, character, and relations of Carboniferous strata and Pleistocene deposits, the geologic and physiographic history of the quadrangle, and the economic resources, coal, clays, petroleum, and natural gas being the most important.

Wooster (L. C.).

1. The Carboniferous rock system of eastern Kansas.

Emporia, Kansas, Press of The Rowland Printing Office, 1905. 12 pp. [Private publication.]
Describes the occurrence, character, thickness, and economic resources of the various Carboniferous formations present in Kansas.

Wooster (L. C.)—Continued.

2. Some notes on Kansas geology.

Kans. Acad. Sci., Trans., vol. 19, pp. 118-121, 1 pl., 1905.
Brief notes on the occurrence, relations, and character of Carboniferous strata in Kansas.

Wortman (J. L.).

1. A new American species of Amphicyon.

Am. Jour. Sci., 4th ser., vol. 11, pp. 200-204, 2 figs., 1901.
Describes the characters of the skull and the relations of the Amphicyon group.

2. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 11, pp. 333-348, 1 pl., 6 figs.; pp. 437-450, 1 pl., 11 figs., 1901.
Discusses the relations of the Carnivora and Creodonta, and describes the characters of some forms of Canidæ, including a few new species.

3. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 12, pp. 143-154, 13 figs., 1901.
Describes Viverravus Marsh, V. gracilis Marsh, minutus n. sp., and Oödectes herpestoides n. gen. et sp.

4. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 12, pp. 193-206, 13 figs., 1901.
Continues description of Oödectes herpestoides n. sp., and describes Triacodon fallax Marsh, Ziphacodon rugatus Marsh, Harpalodon sylvestris Marsh, Aelurotherium latidens Marsh, and A. bicuspis n. sp.

5. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 12, pp. 281-296, 4 pls., 1 fig., 1901.
Gives the important characters by which the Creodonta are distinguished from the Carnassidentia, and describes Harpagolestes macrocephalus n. gen. et sp., and Dromocyon vorax Marsh.

6. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 12, pp. 377-382, 4 figs., and 421-432, 2 pls., 12 figs., 1901.
Continues description of Dromocyon vorax Marsh.

7. The probable successors of certain North American primates.

Science, new ser., vol. 13, pp. 209-211, 1901.

8. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 14, pp. 17-23, 4 figs., 1902.
Describes two new species of Sinopa, discusses certain relations of the creodonts, and gives a summary of the author's previous papers on the Eocene Carnivora in the Marsh collection.

9. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 13, pp. 39-46, 4 figs., 1902.
Describes Mesonyx obtusidens Cope and discusses the origin of the tritubercular molar.

10. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 13, pp. 115-128, 6 figs., 1902.
Discusses the character and habits of Patriofelis ferox Marsh.

11. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 13, pp. 197-206, 1 pl., 12 figs., 1902.

12. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 13, pp. 433-448, 2 pls., 13 figs., 1902.
Describes Sinopa rapax Leidy and S. agilis Marsh.

13. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum. Part II, Primates.

Am. Jour. Sci., 4th ser., vol. 15, pp. 163-176, 5 figs.; pp. 399-414, 419-436; vol. 16, pp. 345-368, 2 pls., 15 figs., 1903.
Discusses characters, relationships, classification, origin, and distribution of primates, and gives descriptions of forms belonging to the Cheiromyidæ.

14. Studies of Eocene Mammalia in the Marsh collection, Peabody Museum.

Am. Jour. Sci., 4th ser., vol. 17, pp. 23-33, 133-140, 203-214, 23 figs., 1904.

Wright (Albert A.).

1. New evidence upon the structure of Dinichthys.

Ohio State Acad. Sci., 5th Ann. Rept., pp. 59-60, 1897.

Wright (Albert A.)—Continued.

2. Ohio boulders containing "huronite."

Ohio State Acad. Sci., 5th Ann. Rept., pp. 60-61, 1897.

Wright (Charles W.).

1. The Porcupine placer mining district, Alaska.

U. S. Geol. Surv., Bull. no. 225, pp. 60-63, 1904.
Describes briefly the general geology and the occurrence and mining of placer gold.

2. The Porcupine placer district, Alaska.

U. S. Geol. Surv., Bull. no. 236, 35 pp., 10 pls., 4 figs., 1904.
Describes the general geology, the character and occurrence of placer gold deposits, and the mining operations.

Wright (Charles W.), **Wright** (F. E.) and.

1. Economic developments in southeastern Alaska.

See **Wright** (F. E.) and **Wright** (C. W.), 1.

Wright (Fred Eugene).

1. A new combination wedge for use with the petrographical microscope.

Jour. Geol., vol. 10, pp. 33-35, 1 fig., 1902.

2. Two microscopic-petrographical methods.

Am. Jour. Sci., 4th ser., vol. 17, pp. 385-391, 6 figs., 1904.
Describes methods of determining index of refraction and optical character of minerals.

3. Der Alkalisyenit von Beverly, Massachusetts, U. S. A.

Tschermak's Min. u. Petrogr. Mitt., N. F., Bd. 19, pp. 308-320, 11 figs., 1900.
Describes crystallographic characters and composition of an alkali-syenite from Beverly, Massachusetts.

4. Report of progress in the Porcupines [Michigan].

Mich. Geol. Surv., Ann. Rept. for 1903, pp. 33-44, 1905.
Describes the field work of 1903 and gives notes upon the geology.

5. The determination of the optical character of bi-refracting minerals.

Am. Jour. Sci., 4th ser., vol. 20, pp. 285-296, 6 figs., 1905.

6. Notes on the rocks and minerals of Michigan. To accompany the loan collection issued by the Michigan College of Mines.

Houghton, 1905. 105 pp., 2 pls., 11 figs.

Wright (F. E.) and **Wright** (C. W.).

1. Economic developments in southeastern Alaska.

U. S. Geol. Surv., Bull. no. 259, pp. 47-68, 1905.
Describes the general geology and the character and occurrence of placer gold deposits.

Wright (Frederick Bennett).

1. The mastodon and mammoth contemporary with man.

Records of the Past, vol. 2, pp. 243-253, illus., 1903.

Wright (G. Frederick).

1. Report of the boulder committee of the Ohio State Academy of Sciences.

Ohio State Acad. Sci., 2d Ann. Rept., pp. 5-10 [1894].
Discusses source and distribution of glacial bowlders.

2. Report of the boulder committee of the Ohio State Academy of Sciences.

Ohio State Acad. Sci., 3d Ann. Rept., pp. 6-7 [1895].
Discusses distribution and source of glacial bowlders in Ohio.

3. The rate of lateral erosion at Niagara.

Am. Geol., vol. 29, pp. 140-143, 1 pl., 2 figs., 1902.
Gives the results of measurements to determine the rate at which the face of the gorge crumbles away under the influence of subaerial agencies.

4. The age of the Lansing skeleton.

Records of the Past, vol. 2, pp. 119-124, illus., 1903.

5. Glacial man.

Records of the Past, vol. 2, pp. 259-271, illus., 1903.

Wright (G. Frederick)—Continued.

6. The Lansing skull and the early history of mankind.

Bibliotheca Sacra, 73d yr., pp. 28-32, 1903.

7. The revision of geological time.

Bibliotheca Sacra, 73d yr., pp. 578-582, 1903.
Reviews and discusses the evidence for the length of post-Glacial time.

8. The problem of the loess in the Missouri Valley compared with that in Europe and Asia.

Abstract: Science, new ser., vol. 17, pp. 227-228, 1903; Sci. Am. Suppl., vol. 55, p. 22666, 1903.

9. Evidence of the agency of water in the distribution of the loess in the Missouri Valley.

Am. Geol., vol. 33, pp. 205-222, 3 pls., 1904.
Discusses the distribution of the loess and the evidences of its deposition by the agency of water. Includes a note by Professor Lane on the flow of flooded rivers.

10. Another Glacial wonder.

The Nation, vol. 77, pp. 462-463, 1904.
Describes the occurrence of Glacial bowlders in the vicinity of Tuscumbia, Mo., and gives an explanation as to how they came there, and its bearing on the origin of the loess.

11. Prof. Shimek's criticism of the aqueous origin of loess.

Am. Geol., vol. 35, pp. 236-249, 1905.

12. Albert Allen Wright.

Am. Geol., vol. 36, pp. 65-68, 1 pl. (por.), 1905.
Includes a list of his published writings.

13. The physical conditions in North America during man's early occupancy.

Records of the Past, vol. 4, pp. 15-26, 9 figs., 1905.

14. Recent date of lava flows in California.

Records of the Past, vol. 4, pp. 105-198, 1 fig., 1905.

15. The ancient gorge of Hudson River.

Records of the Past, vol. 4, pp. 167-171, 2 figs., 1905.

Wuensch (A. F.).

1. The Arizpe meteorite [Mexico].

Colo. Sci. Soc., Proc., vol. 7, pp. 67-68, illus., 1903.

Y.

Yates (J. A.).

1. The Ottawa [Kansas] gas wells.

Kans. Acad. Sci., Trans., vol. 18, pp. 106-108, 1903.
Describes the exploration for natural gas and gives a record of the borings.

Yates (Lorenzo Gordin).

1. Prehistoric California.

So. Cal. Acad. Sci., Bull., vol. 1, pp. 81-86, 3 pls.; pp. 97-100, 4 pls.; pp. 113-118, 2 pls.; pp. 129-137, 2 pls., 1902; vol. 2, pp. 145-155, 2 pls.; pp. 17-22, 3 figs.; pp. 44-51, 4 pls.; pp. 74-75, 1 pl.; pp. 87-93, 3 pls.; pp. 97-101, 2 pls.; pp. 113-118, 2 pls., 1903; vol. 3, pp. 6-10, 1 pl., 1904.
Describes physiography and general geologic structure and history of southern California, and the character of the flora and fauna during Tertiary time, and gives lists and figures of and notes upon fossil plants and animals.

Yates (William).

1. Natural history, meteorological and geological notes from Burford township [Ontario].

Hamilton Sci. Assoc., Jour. & Proc., no. 20, pp. 144-154, 1904.
Includes observations upon glacial phenomena in this region.

Young (George A.).

1. Geology of Yamaska Mountain [Quebec].

Can. Geol. Surv., Summ. Rept. for 1903, pp. 144-146, 1904.

Young (George A.)—Continued.

2. On surveys between Rabbit and Temagami lakes [Ontario].

Can. Geol. Surv., Summ. Rept. for 1904, pp. 195-198, 1905.

Gives observations on the geology and petrology of the region examined.

Young (L. E.), **Beyer** (S. W.) and.

1. Geology of Monroe County, Iowa.

See **Beyer** (S. W.) and **Young** (L. E.), 1.

Yung (Morrison B.) and **McCaffery** (Richard S.).

1. The ore deposits of the San Pedro district, New Mexico.

Am. Inst. Mg. Engrs., Trans., vol. 33, pp. 350-362, 7 figs. 1903; Eng. & Mg. Jour., vol. 75, pp. 297-299, 4 figs., 1903.

Describes the general geology of the region, and the occurrences, geologic relations, and character of the copper, silver-lead, and gold deposits.

Z.

Zirkel (Ferdinand).

1. Ueber die gegenseitigen Beziehungen zwischen der Petrographie und angrenzenden Wissenschaften.

Jour. Geol., vol. 12, pp. 485-500, 1904.

Discusses the scope and methods of petrography and relations to connected sciences.

CLASSIFIED KEY TO THE INDEX.

Page.

- Alabama 293
- Alaska 293
- Archean and Algonkian 395
  - Alaska 395
  - Appalachian region 395
  - Canada 395
  - Great Basin region 395
  - Great Lakes region 396
  - Great Plains region 396
  - Lake Superior region 396
  - Mississippi Valley region 396
  - New England and New York 396
  - Pacific coast region 396
  - Rocky Mountain region 396
  - Southwestern region 397
  - General 397
- Arizona 397
- Arkansas 398
- Bibliography 399
- Biography 403
- California 404
- Cambrian 407
  - Appalachian region 407
  - Canada 407
  - Great Basin region 407
  - Great Lakes region 407
  - Great Plains region 407
  - Lake Superior region 408
  - Mississippi Valley region 408
  - New England and New York 408
  - Pacific coast region 408
  - Rocky Mountain region 408
  - Southwestern region 408
  - General 408
- Canada 408
  - Alberta 408
  - Assiniboia 409
  - Athabasca 409
  - British Columbia 409
  - Cape Breton Island 410
  - Franklin 410
  - Keewatin 410
  - Labrador 410
  - Manitoba 410
  - New Brunswick 411

Canada—Continued. Page.
  - Northwest Territory 411
  - Nova Scotia 411
  - Ontario 412
  - Prince Edward Island 414
  - Quebec 414
  - Saskatchewan 415
  - Ungava 415
  - Yukon Territory 415
  - General 415
- Carboniferous 417
  - Alaska 417
  - Appalachian region 417
  - Canada 418
  - Great Basin region 418
  - Great Lakes region 418
  - Great Plains region 418
  - Mexico 419
  - Mississippi Valley region 419
  - New England and New York 420
  - Ohio Valley region 420
  - Pacific coast region 420
  - Rocky Mountain region 420
  - Southwestern region 420
  - General 421
- Cartography 421
- Central America 421
- Chemical analyses 421
- Classification 433
- Colorado 433
- Connecticut 436
- Correlation 436
- Cretaceous 437
  - Alaska 437
  - Atlantic coast region 437
  - Canada 438
  - Great Basin region 438
  - Great Plains region 438
  - Gulf region 439
  - Mexico 439
  - Mississippi Valley region 439
  - New England and New York 439
  - Pacific coast region 439
  - Rocky Mountain region 440
  - Southwestern region 440
  - West Indies 440
  - General 440
- Delaware 440
- Devonian 441
  - Alaska 441
  - Appalachian region 441
  - Canada 441
  - Great Basin region 441
  - Great Lakes region 441

Devonian—Continued.	Page.
Greenland	441
Mississippi Valley region	442
New England and New York	442
Ohio Valley region	442
Pacific coast region	443
Rocky Mountain region	443
Southwestern region	443
General	443
District of Columbia	443
Dynamic and structural geology (geographic divisions)	443
Alaska	443
Appalachian region	443
Atlantic coast region	443
Canada	443
Central America	444
Great Basin region	444
Great Lakes region	444
Great Plains region	444
Greenland	445
Gulf region	445
Hawaiian Islands	445
Mexico	445
Mississippi Valley region	445
New England and New York	445
Ohio Valley region	446
Pacific coast region	446
Panama	446
Philippine Islands	446
Rocky Mountain region	446
Southwestern region	446
West Indies	447
Dynamic geology (divisions by subject-matter)	448
Caves	448
Concretions	448
Deformation	448
Earthquakes	448
Erosion	449
Faulting	450
Folding	451
Glaciers	451
Intrusion	452
Jointing	452
Landslides	452
Magmatic differentiation	452
Metamorphism	452
Ore formation	452
Orogeny	453
Oscillation	453
Sedimentation	453
Underground temperature	454
Volcanoes	454
Weathering	456
General	456

Page.
Economic geology 458
- Alabama 458
- Alaska 458
- Arizona 459
- Arkansas 460
- California 460
- Canada 461
- Colorado 463
- Connecticut 465
- Delaware 465
- District of Columbia 465
- Florida 465
- Georgia 465
- Hawaiian Islands 465
- Idaho 465
- Illinois 465
- Indiana 466
- Indian Territory 466
- Iowa 466
- Kansas 467
- Kentucky 467
- Louisiana 467
- Maine 468
- Maryland 468
- Massachusetts 468
- Mexico 468
- Michigan 469
- Minnesota 470
- Mississippi 470
- Missouri 470
- Montana 470
- Nebraska 471
- Nevada 471
- Newfoundland 471
- New Hampshire 472
- New Jersey 472
- New Mexico 472
- New York 472
- Nicaragua 473
- North Carolina 473
- North Dakota 473
- Ohio 473
- Oklahoma 473
- Oregon 474
- Panama 474
- Pennsylvania 474
- Philippine Islands 475
- Rhode Island 475
- South Carolina 475
- South Dakota 475
- Tennessee 475
- Texas 476
- Utah 476

Page.
Economic geology—Continued.
  Vermont 477
  Virginia 477
  Washington 477
  West Indies 478
  West Virginia 478
  Wisconsin 478
  Wyoming 479
  General 479
Economic products described 482
Florida 495
Geologic formations described 495
Geologic maps 544
Georgia 546
Glacial geology 547
  Alaska 547
  Appalachian region 547
  Atlantic coast region 547
  Canada 547
  Great Basin region 547
  Great Lakes region 547
  Great Plains region 548
  Mississippi Valley region 548
  New England and New York 549
  Ohio Valley region 550
  Pacific coast region 550
  Rocky Mountain region 550
  General 550
Greenland 551
Guam 551
Guatemala 551
Hawaiian Islands 551
Honduras 552
Hydrology 552
  Appalachian region 552
  Atlantic coast region 552
  Canada 552
  Great Basin region 552
  Great Lakes region 552
  Great Plains region 552
  Gulf region 553
  Hawaiian Islands 553
  Lake Superior region 553
  Mexico 553
  Mississippi Valley region 553
  New England and New York 554
  Ohio Valley region 554
  Pacific coast region 554
  Rocky Mountain region 554
  Southwestern region 554
  West Indies 555
  General 555
Idaho 555

Page.
Illinois 555
Indiana 556
Indian Territory 557
Iowa 557
Jurassic 558
    Alaska 558
    Atlantic coast region 558
    Great Basin region 559
    Great Plains region 559
    Greenland 559
    New England and New York 559
    Pacific coast region 559
    Rocky Mountain region 559
    Southwestern region 559
Kansas 559
Kentucky 561
Labrador 562
Louisiana 562
Maine 562
Marcus Island 562
Maryland 562
Massachusetts 564
Mexico 565
Michigan 567
Mineralogy 568
Minerals described 573
Minnesota 587
Mississippi 588
Missouri 588
Montana 589
Nebraska 590
Nevada 591
Newfoundland 592
New Hampshire 592
New Jersey 592
New Mexico 593
New York 594
Nicaragua 598
Nomenclature 598
North Carolina 599
North Dakota 599
Ohio 599
Oklahoma 600
Ordovician 601
    Appalachian region 601
    Canada 601
    Great Basin region 601
    Great Lakes region 601
    Great Plains region 602
    Mississippi Valley region 602
    New England and New York 602
    Ohio Valley region 602
    Rocky Mountain region 603

	Page.
Ordovician—Continued.	
Southwestern region	603
General	603
Oregon	603
Paleogeography	604
Paleontology	604
Algonkian	604
Cambrian	604
Carboniferous	605
Cretaceous	606
Devonian	608
Jurassic	609
Ordovician	609
Quaternary	610
Silurian	611
Tertiary	612
Triassic	614
Invertebrate	614
Vertebrate	620
Paleobotany	625
General	627
Genera and species described	627
Panama	729
Pennsylvania	729
Petrology	731
Alaska	731
Arizona	731
Arkansas	731
California	731
Canada	732
Colorado	732
Connecticut	733
District of Columbia	733
Georgia	733
Greenland	733
Guatemala	733
Hawaiian Islands	733
Idaho	733
Iowa	733
Kentucky	733
Maine	733
Maryland	733
Massachusetts	733
Mexico	733
Michigan	734
Minnesota	734
Missouri	734
Montana	734
Nevada	734
Newfoundland	734
New Hampshire	734
New Jersey	734
New Mexico	734

Petrology—Continued.	Page
New York	734
North Carolina	735
Ohio	735
Oklahoma	735
Oregon	735
Pennsylvania	735
Philippine Islands	735
South Dakota	735
Tennessee	735
Texas	735
Utah	735
Vermont	735
Virginia	735
Washington	735
West Indies	736
Wisconsin	736
Wyoming	736
General	736
Rocks described	737
Philippine Islands	743
Physiographic geology	743
Alaska	743
Appalachian region	744
Atlantic coast region	744
Canada	744
Central America	745
Great Basin region	745
Great Lakes region	745
Great Plains region	746
Hawaiian Islands	746
Mexico	746
Mississippi Valley region	746
New England and New York	747
Ohio Valley region	747
Pacific coast region	748
Panama	748
Rocky Mountain region	748
Southwestern region	749
West Indies	749
General	749
Quaternary	750
Alaska	750
Appalachian region	750
Atlantic coast region	750
Canada	751
Central America	751
Great Basin region	751
Great Lakes region	751
Great Plains region	751
Gulf region	751
Mexico	751
Mississippi Valley region	751
New England and New York	752

Quaternary—Continued. Page.
- Ohio Valley region 752
- Pacific coast region 752
- Rocky Mountain region 752
- Southwestern region 753
- West Indies 753
- General 753

Rhode Island 753

Salvador 753

Silurian 753
- Alaska 753
- Appalachian region 753
- Atlantic coast region 753
- Canada 753
- Great Basin region 754
- Great Lakes region 754
- Greenland 754
- Mississippi Valley region 754
- New England and New York 754
- Ohio Valley region 754
- Southwestern region 755
- General 755

South Carolina 755

South Dakota 755

Tennessee 756

Tertiary 757
- Alaska 757
- Atlantic coast region 757
- Canada 757
- Great Basin region 757
- Great Plains region 757
- Greenland 757
- Gulf region 757
- Mexico 758
- Mississippi Valley region 758
- New England and New York 758
- Ohio Valley region 758
- Pacific coast region 758
- Panama 759
- Philippine Islands 759
- Rocky Mountain region 759
- Southwestern region 759
- West Indies 759
- General 760

Texas 760

Triassic 761
- Alaska 761
- Appalachian region 761
- Atlantic coast region 761
- Canada 761
- Great Basin region 761
- Great Plains region 761
- Pacific coast region 762
- Rocky Mountain region 762

Triassic—Continued. Page.
Southwestern region 762
General 762
Trinidad 762
Utah 762
Vermont 763
Virginia 764
Washington 764
West Indies 765
West Virginia 767
Wisconsin 768
Wyoming 769
Miscellaneous 770

INDEX.

Alabama.

- Age of Alabama white limestone, Casey, 2.
- Alabama coal fields, McCalley, 1.
- Carboniferous fossils in Ocoee slates, Smith (E. A.), 1.
- Carboniferous of the Appalachian Basin, Stevenson (J. J.), 6.
- Cement resources of Alabama, Smith (E. A.), 3, 4.
- Clays of the United States, Ries, 6.
- Geology and cement resources of the Tombigbee River district, Eckel and Crider, 1.
- Geology of the Coosa Valley, U. S. G. S., 1.
- Grand Gulf formation, Smith and Aldrich, 1.
- Index to mineral resources of Alabama, Smith and McCalley, 1.
- Iron ores in the Brookwood quadrangle, Burchard, 3.
- Lower Carboniferous of Appalachian Basin, Stevenson (J. J.), 4.
- Marble formations of the Cahaba River, Byrne, 1, 2.
- Materials and manufacture of Portland cement, Eckel, 13, 31.
- Meteoreisen von De Sotoville, Brezina and Cohen, 5.
- Meteorite which fell near Felix, Alabama, Merrill (G. P.), 2.
- New species of Eocene fossils, Aldrich, 4.
- New species of Tertiary fossils, Aldrich, 2.
- Oligocene of western Europe and southern United States, Maury, 1.
- Origin of Clinton red fossil ore in Lookout Mountain, Alabama, Bowron, 1.
- Oyster from Eocene of Alabama, Aldrich, 5.
- Portland-cement materials of Alabama, Smith (E. A.), 2, 8.
- Pratt coal mines, Crane, 6.
- Revised map of Cahaba coal fields, Smith (E. A.), 9.
- Rome Folio, Hayes (C. W.), 5.
- Southern Appalachian coal field, Hayes (C. W.), 7.
- Underground waters of Alabama, Smith (E. A.), 6.

Alabama—Continued.

- Warrior coal basin in the Brookwood quadrangle, Butts, 5.
- Water powers of Alabama, Hall (B. M.), 1.
- Water resources of Alabama, Smith (E. A.), 5.

Alaska.

- Alaska glaciers and glaciation, Gilbert, 13.
- Alaskan tin deposits, Collier, 11.
- Alaska's mineral wealth, Brooks, 10, 13.
- Alaska-Treadwell mine, Palache, 2.
- Auriferous quartz veins on Unalaska Island, Collier, 10.
- Bering River coal field, Martin (G. C.), 15.
- Bogoslof, our newest volcano, Merriam (C. H.), 1.
- Cape Yaktag placers, Martin (G. C.), 12.
- Carboniferous section in Copper River Valley, Mendenhall, 6.
- Chistochina gold field, Mendenhall, 4.
- Chitina copper deposits, Mendenhall, 7.
- Coal-bearing series of the Yukon, Collier, 6.
- Coal fields of Cape Lisburne, Collier, 3, 7, 12.
- Coal fields of Cook Inlet, Alaska, and Pacific coast, Kirsopp, 1.
- Coal resources of Alaska, Brooks, 3.
- Coal resources of southwestern Alaska, Stone (R. W.), 5.
- Coal resources of the Yukon, Collier, 2, 4.
- Copper deposits of Mount Wrangell region, Mendenhall and Schrader, 2.
- Copper River country, Abercrombie, 1.
- Deposition of ores from an igneous magma, Stevenson (R.), 3.
- Economic developments in southeastern Alaska, Wright (F. E. and C. W.), 1.
- Epidote crystals from Alaska, Palache, 1.
- Fairhaven gold placers, Moffit, 3.
- Fossil floras of the Yukon, Knowlton, 17.
- Fossil plants from Kukak Bay, Knowlton, 16.
- Fossils and age of Yakutat formation, Ulrich, 4.
- Geography of Alaska, Brooks, 10.

Alaska—Continued.
Geography of Alaska, Gannett, 2.
Geological reconnaissance in southeastern Alaska, Brooks, 5.
Geological section of Rocky Mountains in northern Alaska, Schrader, 1.
Geology about Chichagof Cove, Palache, 3.
Geology and mineral resources of Copper River district, Schrader and Spencer, 1.
Geology and paleontology of the Alaska Harriman expedition, Gilbert, 14.
Geology of copper deposits, Stevens (B.), 1.
Geology of Copper River region, Mendenhall, 8.
Geology of the Klondike, Mendenhall, 3.
Geology of Treadwell ore deposits, Spencer (A. C.), 11, 13.
Glacial phenomena of Seward Peninsula, Brooks and Collier, 1.
Glaciers of Alaska, Davidson, 1.
Glenn Creek gold mining district, Collier, 3.
Gold deposits of Shumagin Islands, Martin (G. C.), 13.
Gold mining in Alaska, Furman, 1.
Gold mining in Arctic America, Penrose, 1.
Gold mining in Klondike, Miers, 2.
Gold placers of the Fairbanks district, Prindle, 1, 2.
Gold placers of Turnagain Arm, Moffit, 4.
Gold production of North America, Lindgren, 16.
Gold production of North America, Spurr, 13.
Gold sands of Cape Nome, Queneau, 1.
Guldforekomsterne i Alaska og tilgrænsende strøg, Kolderup, 1.
Juneau gold belt, Spencer (A. C.), 9.
Jura-fossilien aus Alaska, Pompeckj, 1.
Kayak coal and oil fields, Stoess, 1.
Kotzebue placer-gold field, Moffit, 2.
Magmatic origin of vein-forming waters in southeastern Alaska, Spencer (A. C.), 17.
Mesozoic section on Cook Inlet, Stanton and Martin, 1.
Methods and costs of gravel and placer mining in Alaska, Purington, 8, 9.
Mineral resources of Alaska in 1904, Brooks, 11.
Mineral resources of Mount Wrangell district, Mendenhall and Schrader, 1.
Mineral resources of southeastern Alaska, Brewer (W. M.), 12.
Minerals of the Harriman Alaska expedition, Palache, 4.
Mining at the Alaska Treadwell, Kinzie, 1.
Muir glacier, Andrews, 1.
Neozoic invertebrate fossils, Dall, 10.
Nome gold region, Schrader and Brooks, 1.

Alaska—Continued.
Notes on Nome, Rickard (F.), 1.
Observations paléontologiques dans l'Alaska, Gaudry, 1.
Occurrence of cassiterite, Brooks, 1.
Occurrence of stream tin, Brooks, 2.
Origin of vein-filled openings in southeastern Alaska, Spencer (A. C.), 18.
Ore formation on Prince of Wales Island, Thomae, 1.
Outlook for coal mining in Alaska, Brooks, 14.
Pacific coast glaciers, Muir, 1.
Pacific mountain system, Spencer (A. C.), 5.
Pacific mountain system of British Columbia and Alaska, Spencer (A. C.), 4.
Petroleum fields of Alaska, Martin (G. C.), 3, 14.
Petroleum fields of Pacific coast, Martin (G. C.), 11.
Physiography of the Copper River basin, Spencer (A. C.), 2.
Placer gold mining in Alaska in 1902, Brooks, 7.
Placer mining in Alaska, Brooks 9, 12.
Porcupine placer mining district, Wright (C. W.), 1, 2.
Preliminary report on the Ketchikan mining district, Brooks, 4.
Rampart placer region, Prindle and Hess, 1.
Recent changes of level in Alaska, Tarr and Martin, 1.
Rocks and minerals of south Alaska, Novarese, 1.
Reconnaissance from Fort Hamlin to Kotzebue Sound, Mendenhall, 2.
Reconnaissance in Alaska, Schrader, 3.
Reconnaissance in Mount McKinley region, Alaska, Brooks, 6.
Reconnaissance in northern Alaska, Peters, 1.
Reconnaissance in Norton Bay region, Mendenhall, 1.
Reconnaissance of northwestern portion of Seward Peninsula, Collier, 1.
Reconnaissance of the Cape Nome and adjacent gold fields of Seward Peninsula, Brooks and others, 1.
Relation de voyage au Klondyke, Lobel, 1.
Search for mammoth and other fossil remains, Maddren, 1.
Sketch of Nome, Bogdanovič, 1.
So-called basal granite of Yukon Valley, McConnell, 1.
Stratigraphy and igneous rocks of Alaska, Emerson (B. K.), 6.
Stream tin in Alaska, Brooks, 8.
Tin deposits of York region, Rickard (E.), 1.
Tin deposits of the York region, Collier, 7, 8.
Tin in Alaska, Bell (R. N.), 2.
Tin in the York region, Collier, 5.

Alaska—Continued.
Tin ledges in Alaska, Bell (R. N.), 1.
Treadwell group of mines, Kinzie, 2.
Treadwell ore deposits, Spencer (A. C.), 14.
Variations of glaciers, Reid (H. F.), 3.
Wrangell Mountains, Mendenhall, 5.
Yukon gold fields, Miers, 1.

Archean and Algonkian.
Alaska.
So-called basal granite of Yukon Valley, McConnell, 1.
Appalachian region.
Asheville folio, Keith, 9.
Cockeysville marble, Mathews and Miller, 1.
Copper-bearing rocks of Virgilina copper district, Watson (T. L.), 6.
Correlation of Piedmont formations, Mathews, 6.
Cranberry folio, Keith, 4.
Greeneville folio, Keith, 11.
Mount Mitchell folio, Keith, 12.
Piedmont district of Pennsylvania, Bascom, 3.
Pre-Cambrian rocks of Franklin Furnace quadrangle, Spencer (A. C.), 13.
Pre-Cambrian rocks of New Jersey, Spencer (A. C.), 15.
Topography and geology of southern Appalachians, Keith, 3.
Washington folio, Darton and Keith, 1.
Canada.
Classification of the Archean, Coleman, 6.
Cobalt-nickel arsenides and silver deposits of Temiskaming, Miller (W. G.), 13.
Contact of Archean and post-Archean, Willmott, 3.
Correction in classification of gold formation, Hille, 4.
Country west of Nipigon Lake and River, Wilson (A. W. G.), 3.
Economic resources of Moose River basin, Bell (J. M.), 2.
Exploration of east coast of Hudson Bay, Low, 2.
Exploration of Ekwan River, Dowling, 8.
Explorations in Saskatchewan and Keewatin, Tyrrell, 3.
Genesis of Animikie iron range, Hille, 3.
Geological explorations in Athabaska, Dowling, 6.
Geological exploration in district of White Bay, Howley, 1.
Geological formations about Montreal, Ami and Adams, 1.
Geological record of Rocky Mountain region, Dawson, 2.
Geologie von Canada, Haas, 2.
Geology and natural resources of Ottawa and vicinity, Ells (R. W.), 7.

Archean and Algonkian—Continued.
*Canada—*Continued.
Geology of country around Bruce mines, Ingall and Denis, 1.
Geology of Michipicoten Island, Burwash, 1.
Geology of Nastapoka Islands, Low, 3.
Geology of Nottaway River Basin, Bell (Robert), 5.
Geology of northeast coast of Labrador, Daly, 3.
Geology of principal cities in eastern Canada, Ami, 1.
Geology of Province of Quebec, Ells (R. W.), 8.
Geology of Renfrew, Addington, Frontenac, Lanark, and Carleton counties, Ells (R. W.), 20.
Geology of Yellow Head Pass route, McEvoy, 1.
Gold ores of western Ontario, Brent, 1.
Headwaters of Severn River, Camsell, 2.
Huronian question, Coleman, 10.
Iron ores of Nipissing district, Miller (W. G.), 2.
Iron ranges of Michipicoten west, Bell (J. M.), 3.
Iron ranges of northwestern Ontario, Coleman, 12.
Iron ranges of the Lower Huronian, Coleman, 4.
Loon Lake iron-bearing district, Smith (W. N.), 1.
Michipicoten iron region, Coleman and Willmott, 1, 2.
Michipicoten Huronian area, Willmott, 1.
Nickel and copper deposits of Sudbury, Barlow, 8.
Northeastern Canada to the Arctic coast, Hanbury, 1.
Pre-Cambrian rocks of Lake Temiskaming, Miller (W. G.), 16.
Problems in New Brunswick geology, Ells (R. W.), 25.
Round Lake to Abitibi River, Bolton, 1.
Synopsis of geology of Canada, Ami, 2.
Types of iron-bearing rocks in Ontario, Coleman, 7.
Up and down the Mississaga, Graton, 2.
Great Basin region.
Bisbee folio, Ransome, 14.
Bradshaw Mountains folio, Jaggar and Palache, 1.
Clifton folio, Lindgren, 28.
Copper deposits of Clifton-Morenci district, Lindgren, 29.
Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
Geology and vein phenomena of Arizona, Comstock (T. B.), 1.
Geology of Nevada, Spurr, 6.
Globe folio, Ransome, 13.
Historical geology of Esmeralda County, Nevada, Turner, 5.
Paleozoic rocks of Great Basin region, Weeks, 9.

Archean and Algonkian—Continued.

Great Basin region—Continued.

- Underground waters of Salt River Valley, Lee (W. T.), 9.

Great Lakes region.

- Baraboo iron-bearing district of Wisconsin, Weidman, 5.
- Ellipsoidal structure in pre-Cambrian basic and intermediate rocks of Lake Superior region, Clements, 1.
- Geological cross sections of Keweenaw Point, Hubbard (L. L.), 1.
- Geology of Menominee Range, Hulst, 1.
- Keeweenawan area of eastern Minnesota, Hall, (C. W.), 3.
- Menominee district of Michigan, Bayley, 1.
- Relation of vein at Central mine, Keweenaw Point, to Kearsarge conglomerate, Hubbard (L. L.), 2.
- Vermilion district of Minnesota, Clements, 2.

Great Plains region.

- Alexandria folio, Todd and Hall, 1.
- Geology and underground water resources of the central Great Plains, Darton, 18.
- Geology and water resources of the James River Valley, Todd and Hall, 2.
- Geology of Lincoln County, Bendrat, 1.
- Hartville folio, Smith (W. S. T.), 1.
- Mitchell folio, Todd (J. E.), 11.
- Olivet folio, Todd (J. E.), 9.
- Parker folio, Todd (J. E.), 10.
- Sundance folio, Darton, 26.
- Water resources of Devils Lake region, Babcock, 2.

Lake Superior region.

- Comment on report of special committee on Lake Superior, Lane, 47.
- Eisenerzlagerstätten am Lake Superior, Macco, 1.
- Huronian question, Coleman, 10.
- Geological survey of the Lake Superior region, Chamberlin (T. C.), 12.
- Geology of the iron ores of Minnesota, Winchell (N. H.), 24.
- Lake Superior iron ore deposits, Grant (U. S.), 6.
- Mesabi iron-ore range, Woodbridge, 1.
- Mesabi Iron Range, Leith, 2.
- Mesabi iron-bearing district of Minnesota, Leith, 4.
- New iron-bearing horizon in Keewatin in Minnesota, Winchell (N. H.), 1.
- Nomenclature of Lake Superior formations, Willmott, 2.
- Pioneer iron mine, Ely, Minnesota, Carlyle, 1.
- Report on Lake Superior region, Van Hise and others, 1.
- Sixth annual report of the State geologist, Lane, 49.
- Summary of Lake Superior geology, Leith, 14.
- Summary report of Geological Survey of Canada for 1904, Bell (Robert), 8.

Archean and Algonkian—Continued.

Lake Superior region—Continued.

- Vermilion district of Minnesota, Clements, 5.
- Vermilion iron-bearing district of Minnesota, Clements, 4.

Mississippi Valley region.

- Baraboo iron region, Winchell (N. H.), 23.
- Geology of Minnesota, Hall (C. W.), 7.
- Geology of Mississippi Valley at Little Falls, Minnesota, Winchell (N. H.), 8.
- Physiography and geology of Ozark region, Adams (G. I.), 3.

New England and New York.

- Cambrian and pre-Cambrian of Hoosac Mountains, Wolff, 3.
- Field work in town of Minerva, Finlay (G. I.), 2.
- Geology of Adirondack region, Cushing, 10.
- Geology of crystalline rocks, Smyth (C. H.), 1.
- Geology of Paradox Lake quadrangle, Ogilvie, 6.
- Geology of Rand Hill, Cushing, 2.
- Geology of vicinity of Little Falls, Cushing, 9.
- Igneous rocks of Neponset Valley, Crosby, 15.
- New York City folio, Merrill and others, 1.
- Physical geography and geology of Connecticut, Rice, 1.
- Pre-Cambrian formations, Kemp and Hill, 1.
- Pre-Cambrian Highlands, Merrill (F. J. H.), 6.
- Pre-Cambrian outlier at Little Falls, Herkimer County, Cushing, 4.
- Quarry industry in southeastern New York, Eckel, 6.
- Recent geologic work in Franklin and St. Lawrence counties, Cushing, 3.
- Terranes of Orange County, Vt., Richardson (C. H.), 1.

Pacific coast region.

- Crystalline rocks of southern California, Hershey, 9.

Rocky Mountain region.

- Copper deposits of the Encampment district, Spencer (A. C.), 10.
- Geology and ore deposits of Elkhorn mining district, Montana, Weed, 5.
- Geology of Boulder district, Fenneman, 10.
- Geology of Needle Mountains quadrangle, Cross and Howe, 3.
- Geology of Rico quadrangle, Cross (W.), 7.
- Geology of southwestern Montana, Douglass, 10.
- Igneous rocks of Algonkian series, Finlay (G. I.), 4.
- Oil of the northern Rocky Mountains, Willis, 4.

Archean and Algonkian—Continued.
Rocky Mountain region—Continued.
Silverton folio, Cross and Howe, 1.
Stratigraphy and structure, Lewis and Livingston ranges, Montana, Willis, 6.
Structure of Front Range, northern Rocky Mountains, Montana, Willis, 7.
Sundance folio, Darton, 26.
Southwestern region.
Fundamental complex beyond southern end of Rocky Mountains, Keyes, 46.
Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
Geology of Arbuckle and Wichita mountains, Taff, 13.
Geology of Fort Apache region, Reagan, 3.
Red sandstone of Diabolo Mountains, Dumble, 11.
Tishomingo folio, Taff, 6.
General.
Eparchæan interval, Lawson (A. C.), 4.
Fundamental changes in the Archean and Algonkian, Winchell (N. H.), 6.
Granite, Winchell (N. H.), 18.
Little Cottonwood granite body of Wasatch Mountains, Emmons (S. F.), 9.
Pre-Cambrian literature for 1902–3, Leith, 7.
Pre-Cambrian literature for 1902–3, Leith, 9.
Summaries of current North American Pre-Cambrian literature, Leith, 1.
Sur les formations précambriennes fossilifères, Walcott, 4.
Arizona.
Age of lavas of plateau region, Reagan, 2.
Arid district between Rio Grande and Pacific, Carter (O. S. C.), 5.
Arizona diatomite, Blake (W. P.), 9.
Bradshaw Mountains folio, Jaggar and Palache, 1.
Caliche of southern Arizona, Blake (W. P.), 3.
Carboniferous coal in Arizona, Dumble, 9.
Carboniferous fossils of Bisbee quadrangle, Girty, 6.
Cement investigations in Arizona, Duryee, 1.
Clifton folio, Lindgren, 28.
Conglomerate dikes in southern Arizona, Campbell (M. R.), 15.
Copper deposits of Bisbee, Ransome, 7, 8.
Copper deposits of Clifton, Lindgren, 12, 15.
Copper deposits of Clifton-Morenci district, Lindgren, 29.
Copper deposits of the Kaibab Plateau, Jennings (E. P.), 1.
Copper deposits of the Kaibab Plateau, Lunt, 1.

Arizona—Continued.
Copper in the Red Beds of the Colorado Plateau region, Emmons (S. F.), 20.
Cretaceous fossils of Bisbee quadrangle, Stanton, 6.
Deer Creek coal field, Campbell (M. R.), 16.
Devonian fossils of Bisbee quadrangle, Williams (H. S.), 6.
Diatom-earth in Arizona, Blake (W. P.), 10.
Dinosaur footprints from Arizona, Riggs, 8.
Dumortierite, Schaller, 7.
Evidences of shallow seas in Paleozoic time, Blake (W. P.), 2.
Extinct glaciers, Stone (G. H.), 2.
Faulting and mountain structure in Arizona, Ransome, 5.
Fossil egg from Arizona, Morgan and Tallmon, 1.
Genesis of copper deposits of Clifton-Morenci, Lindgren, 22.
Geology and copper deposits of Bisbee, Ransome, 10, 11.
Geology and vein phenomena of Arizona, Comstock (T. B.), 1.
Geology of Arizona, Blake (W. P.), 1, 13.
Geology of Cochise mining district, Franke, 1.
Geology of Fort Apache region, Reagan, 3.
Geology of Galiuro Mountains, Blake (W. P.), 5.
Geology of Globe copper district, Ransome, 6.
Geology of Mineral Creek district, Gowling, 1.
Geology of the Little Colorado Valley, Ward (L. F.), 1.
Glaciation of San Francisco Mountain, Atwood, 1.
Globe folio, Ransome, 13.
Gold deposits of Arizona, Pratt, 5.
Gold production of North America, Lindgren, 16.
Grand Canyon of the Colorado, Davis (W. M.), 1.
Gypsum deposits in Arizona, Blake (W. P.), 14.
Iodobromite in Arizona, Blake (W. P.), 18.
Lake Quiburis, an ancient Pliocene lake in Arizona, Blake (W. P.), 6.
Limestone-granite contact deposit of Washington camp, Crosby, 16.
Meteoreisen-Studien, Cohen, 4.
Mineralogical notes, Headden, 1.
Mineralogical notes, Warren, 1.
Minerals associated with copper, Stone (G. H.), 1.
Minerals from the Clifton-Morenci district, Lindgren and Hillebrand, 1.
New batrachian and reptile from Trias of Arizona, Lucas (F. A.), 19.

Arizona—Continued.
Notes on geology of southeastern Arizona, Dumble, 7.
Ore in anticlinals. Lakes, 71.
Peculiar occurrence of bitumen, Morgan and Tallmon, 2.
Petrified forest, Byers (C. A.), 1.
Petrified forests and Painted Desert of Arizona. Carter (O. S. C.), 6.
Petrified forests of Arizona. Ward (L. F.), 2.
Petrography of the Tucson Mountains, Guild, 1.
Physiography of southern Arizona and New Mexico, Fairbanks, 5.
Planet copper mines, McCarn, 1.
Plateau province of Utah and Arizona, Davis (W. M.), 45.
Plication in the rocks of Cananea, Blake (W. P.), 17.
Recent discoveries in Arizona, Burgess, 1.
Re-formed copper ores, Goodwin, 1.
Secondary enrichment, Probert, 1.
Silver Bell Mountains, Barney, 1.
Status of Mesozoic floras, Ward (L. F.), 5.
Tombstone and its mines, Blake (W. P.), 8, 12.
Tombstone mining district, Church, 1.
Trip through Arizona, Lakes, 67.
Tungsten deposits in Arizona, Rickard (F.), 3.
Underground waters of Arizona, Skinner, 1.
Underground waters of Gila Valley, Lee (W. T.), 8.
Underground waters of Salt River Valley, Lee (W. T.), 9.
Verde mining district, Miller (G. W.), 1.
Vertebrates from the Trias of Arizona, Lucas (F. A.), 6.
Walls of the Colorado Canyon, Davis (W. M.), 50.
Zuni salt lake, Darton, 19.

Arkansas.
Analysis of smithsonite, Miller (W. W.), 3.
Analysis of waters from Hot Springs, Haywood, 1.
Arkansas bauxite deposits, Hayes (C. W.), 2.
Arkansas-Indian Territory coal field, Bache, 1.
Arkansas roofing slates, Dale, 4.
Asphalt deposits of Pike County, Hayes (C. W.), 4, 14.
Bauxite in Arkansas, Berger, 1.
Borings in Silver Spring Valley, Douglas, 1.
Boston Mountain physiography, Hershey, 12.
Cement materials and industry of the United States, Eckel, 34.
Chalk of southwestern Arkansas, Taff, 5.

Arkansas—Continued.
Coal fields of Arkansas and Indian Territory, Scholz, 2.
Coal mining in Arkansas, Crane, 7.
Depositional equivalent of hiatus at base of our Coal Measures, Keyes, 18.
Devonian hiatus in continental interior, Keyes, 28.
Earthquakes in the New Madrid area, Fuller (M. L.), 41.
Fayetteville folio. Adams and Ulrich, 1.
Formations of northern Arkansas, Ulrich, 5.
Genesis of the Arkansas Valley, Keyes, 4.
Geological sketch of Hot Springs district, Weed, 13.
Gisements de minerais de zinc, Demaret, 1.
Hot springs of the southern United States, Weed, 39.
Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
Lead and zinc deposits of Ozark region, Bain, 2.
Magmatic differentiation of rocks, Keyes, 27.
Miniature overthrust fault and anticline, Purdue, 2.
Missouri and Arkansas zinc mines, Branner, 3.
Missouri and Arkansas zinc mines, Hedburg, 1.
Missouri and Arkansas zinc mines, Nichols (H. W.), 2.
Names of coals west of Mississippi River, Keyes, 19.
Origin of bedded breccias in Arkansas, Adams (G. I.), 13.
Origin of natural mounds, Veatch, 10.
Peneplains of the Ozark highland, Hershey, 1.
Phosphate rocks of Arkansas, Branner and Newsom, 1.
Physiography and geology of Ozark region, Adams (G. I.), 3.
Pleistocene fissure in northern Arkansas, Brown (B.), 3.
Portland-cement materials of southwestern Arkansas, Fitzhugh, 1.
Saddle-back topography of the Boone chert region, Purdue, 4.
Siluric fauna near Batesville, Ark., Van Ingen, 1, 2.
Southwestern coal field, Taff, 4.
Springs of the Ozark region, Fuller (M. L.), 35.
Table of geological formations, Sheppard, 1.
Tahlequah folio, Taff, 17.
Underground waters of Louisiana and Arkansas, Veatch, 7.
Underground waters of northern Arkansas, Purdue, 7.

Arkansas—Continued.
- Valleys of solution in northern Arkansas, Purdue, 1.
- Water resources in northern Arkansas, Purdue, 9.
- Water resources of Arkansas, Purdue, 5.
- Water resources of the Winslow quadrangle, Purdue, 8.
- Water supply of the Ozark region, Adams (G. I.), 17.
- Zinc and lead deposits of Arkansas, Adams (G. I.), 12, 15.
- Zinc and lead deposits of north Arkansas, Branner, 2.
- Zinc-lead deposits of southwest Arkansas, Phillips (W. B.), 3.

Bibliography.
- Abrasives of New York State, Magnus, 1.
- Accessions to library of Geological Society of America, Cushing, 6.
- Addenda and corrigenda to progress of geological work in Canada during 1899, Ami, 5.
- Alaska's mineral wealth, Brooks, 10, 13.
- Albert Allen Wright, Wright (G. F.), 12.
- Alphabetical cross reference catalogue of publications of Edward Drinker Cope, Frazer, 1.
- American Eocene primates, Osborn, 11.
- American Paleontological Society, Section A, Vertebrata, Hay, 18.
- Ancient water levels of Champlain and Hudson valleys, Woodworth, 10.
- Archæan rocks of Ottawa Valley, Osann, 2.
- Arsenic in Ontario, Wells, 1.
- Artesian basins in Idaho and Oregon, Russell, 9.
- Asbestos, Cirkel, 3.
- Atlantic coast Triassic coal field, Woodworth, 4.
- Baraboo iron district of Wisconsin, Weidman, 5.
- Base level, grade, and peneplain, Davis, (W. M.), 26.
- Base leveling and its faunal significance, Adams (C. C.), 1.
- Bauxite deposits of Georgia, Watson (T. L.), 12.
- Bibliographic review and index of papers relating to underground waters published by the United States Geological Survey 1879–1904, Fuller (M. L.), 27.
- Bibliographical sketch of Elkanah Billings, Ami, 15.
- Bibliography and catalogue of fossil vertebrata, Dean, 7.
- Bibliography and catalogue of fossil vertebrata, Hay, 5.
- Bibliography and index of North American geology, paleontology, petrology, and mineralogy for 1901, Weeks, 6.
- Bibliography and index of North American geology, paleontology, petrology. and mineralogy for 1902, Weeks, 7.
- Bibliography and index of North American geology, paleontology, petrology, and mineralogy for 1903, Weeks, 10.
- Bibliography and index of North American geology, paleontology, petrology, and mineralogy for 1904, Weeks, 15.
- Bibliography of Canadian geology and paleontology for 1900, Ami, 19.
- Bibliography of Canadian geology and paleontology for 1901, Ami, 34.
- Bibliography of Canadian geology and paleontology for 1902, Ami, 42.
- Bibliography of Canadian geology and paleontology for 1903, Ami, 44.
- Bibliography of Dr. George M. Dawson, Ami, 27, 35.
- Bibliography of E. Billings, Ami, 17.
- Bibliography of geology, paleontology, and mineral resources of California, Vogdes, 1.
- Bibliography of literature referring to geology of Washington, Arnold, 1.
- Bibliography of Mexican geology and mining, Aguilar y Santillán, 1.
- Bibliography of North American geology, paleontology, petrology, and mineralogy for 1892–1900, Weeks, 3.
- Bibliography of Sir John William Dawson, Ami, 18.
- Bibliography of submarine valleys, Spencer (J. W.), 15.
- Bibliography of West Indian eruptions, Hovey (E. O.), 32.
- Bibliography of works upon the geology and natural resources of West Virginia, Brown (S. S.), 1.
- Biographical notice of Clarence King, Raymond (R. W.), 3.
- Biographical notice of Joseph Le Conte, Christy, 1.
- Biographical notice of William Henry Pettee, Russell, 18.
- Biographical sketch of Henry McCalley, Smith (E. A.), 7.
- Bogoslof, our newest volcano, Merriam (C. H.), 1.
- Books relating to geology, etc., of California, Vogdes, 2.
- Cambrian rocks in eastern Canada, Matthew (G. F.), 29.
- Canadian specimens of Lituites, Whiteaves, 10.
- Carboniferous ammonoids of America, Smith (J. P.), 3.
- Carboniferous formations and faunas of Colorado, Girty, 3.
- Carboniferous system of New Brunswick, Bailey (L. W.), 8.
- Catalogue and index of publications of U. S. Geological Survey, Warman, 1.

Bibliography—Continued.

Catalogue and index of publications of Hayden, King, Powell, and Wheeler surveys, Schmeckebier, 1.
Catalogue chronologique des publications de Edward Drinker Cope, Frazer, 6.
Catalogue of published writings of John Wesley Powell, Warman, 3.
Cement materials and industry of the United States, Eckel, 34.
Charles Emerson Beecher, Clarke (J. M.), 22.
Charles Emerson Beecher, Jackson (R. T.), 1.
Charles Emerson Beecher, Schuchert, 9.
Chicago folio, Alden, 1.
Cirques, Brown (R. M.), 4.
Clarence King, Emmons (S. F.), 5, 6.
Clarence Luther Herrick, Tight, 5.
Clastic dikes, Newsom, 4.
Clays of Maryland, Ries, 5.
Coal fields of Canada, Denis, 1.
Coal fields of Pacific coast, Smith (G. O.), 6.
Contents of reports of Indiana geological survey, Hopkins (T. C.), 12.
Contributions to economic geology, Emmons, Hayes, 1, 2, 3.
Contributions to economic geology, 1903, Hayes (C. W.), 16.
Contributions to economic geology, 1904, Hayes (C. W.), 18.
Contributions to hydrology of eastern United States, Fuller (M. L.), 11.
Copper deposits of Clifton-Morenci district, Lindgren, 29.
Corundum of North Carolina, Pratt and Lewis, 1.
Cretaceous deposits of Pacific coast, Anderson (F. M.), 3.
Cyclus from Coal Measures, Rogers, 3.
Dakota Cretaceous of Kansas and Nebraska, Gould, 5.
Deposits of copper ores at Ducktown, Tenn., Kemp, 10.
Desarrollo de la geología en México. Aguilera, 5.
Description of State geologic map [New York], Merrill (F. J. H.), 2.
Development of Scaphites, Smith (W. D.), 1.
Development of some Paleozoic bryozoa, Cumings, 9.
Devonian era in Ohio basin, Claypole, 5.
Diplodocus (Marsh), Hatcher, 1.
Dolichocephaly and brachycephaly in the lower mammals, Osborn, 9.
Dr. Ferdinand von Roemer, the father of Texas geology, his life and work, Simonds, 2.
Dryptosaurus incrassatus, Lambe, 8.
Dumortierite. Schaller, 7.
Eastern interior coal field, Ashley, 1.
Economic geology of the Bingham district, Boutwell, 12.

Bibliography—Continued.

Eisenführenden Gesteinen der Insel Disko, Nicolau, 1.
Edward Claypole, the man, Bridge, 1.
Eocene deposits of Maryland, Clark and Martin, 1.
Eruptions of Mont Pelé and the Soufrière, Hovey (E. O.), 33.
Eurypterid fauna from the Salina, Sarle, 2.
Extinct glaciers of Colorado, Henderson (J.), 4.
Fossil corals from the elevated reefs of Curaçao, Arube, and Bonaire, Vaughan, 2.
Fossil footprints in the Juratrias, Lull, 2.
Fossil mammalia of White River beds, Douglass, 4.
Fossil mammals of Tertiary of northeastern Colorado, Matthew (W. D), 2.
Fossil turtles, Amphichelydia, Hay, 23.
Fossils from the Vancouver Cretaceous, Whiteaves, 12.
Francis Bain, geologist, Watson (L. W.), 2.
Gebirgbaus von Mittelamerika, Sapper, 22.
Genus Rhynchopora, Greger, 2.
Geographical distribution of freshwater decapods, Ortmann, 3.
Geography of Texas, Simonds, 4.
Geological bibliography of Nebraska, Barbour and Fisher, 1.
Geological relations and distribution of platinum and associated metals, Kemp, 11.
Geological relationship of volcanoes of West Indies, Spencer (J. W.), 8.
Geological Society of America, Hovey (E. O.), 38.
Geological surveys, Broadhead, 1.
Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
Geology and paleontology of Niagara Falls, Grabau, 1.
Geology and water resources of Nez Perces County, Part II, Russell, 2.
Geology of Cincinnati, Nickles, 3.
Geology of Garrett County, Martin (G. C.), 1.
Geology of Globe copper district, Arizona, Ransome, 6.
Geology of the Jemez-Albuquerque region, Reagan, 1.
Geology of Black Hills, Darton, 1.
Geology of the Black Hills, Jaggar, 5.
Geology of the Hudson Valley, Dale, 5.
Geology of the Philippine Islands, Becker, 1.
Geology of Vermont, Seely, 2.
George Mercer Dawson, Ami, 7, 16.
Gerard Troost, Glenn, 9.
Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.

Bibliography—Continued.
Glacial geology of southern peninsula of Michigan, Leverett, 8.
Glaciation of the Green Mountains, Hitchcock (C. H.), 7, 8.
Graptolites of New York, Ruedemann, 8.
Growth of Trinidad, Guppy, 8.
Gypsum industry in New York, Parsons, 4.
Hamilton formation at Milwaukee, Wisconsin, Teller, 1.
Hamilton formation in central New York, Cleland, 2.
Hamilton group of Thedford, Ontario, Shimer and Grabau, 1.
Historical outline of the geological and agricultural survey of the State of Mississippi, Hilgard, 1.
Historical review of geology of Michigan, Lane, 36.
Homoplasy as a law of latent or potential homology, Osborn, 7.
Identification of Meckelian and mylohyoid grooves in mammals, Bensley, 1.
Index generum mammalium, Palmer (T. S.), 1.
Index to mineral resources of Alabama, Smith and McCalley, 1.
Index to North American geology, paleontology, petrology, and mineralogy for 1892–1900, Weeks, 4.
Index to publications of Indiana geological survey, Hopkins (T. C.), 13.
Index to publications of New York State Natural History Survey, Ellis (M.), 1.
Igneous rocks of Highwood Mountains, Pirsson, 4.
Instituto Geologica de México, Guild, 2.
Investigation of metalliferous ores, Emmons (S. F.), 10, 17.
Iron ores of northeastern Texas, Eckel, 37.
Iron ranges of Michipicoten west, Bell (J. M.), 3.
John Bell Hatcher, Schuchert, 15.
Jura-Fossilien aus Alaska, Pompeckj, 1
Kreide-Ammoniten von Texas, Lasswitz, 1.
Lacoe (Ralph Dupuy), Hayden, 1.
Lake Superior iron-ore deposits, Grant (U. S.), 3.
Laurentian peneplain, Wilson (A. W. G.), 6.
Law of adaptive radiation, Osborn, 8.
Lead and zinc deposits of southwestern Wisconsin, Grant (U. S.), 5.
Lead and zinc deposits of Virginia, Watson (T. L.), 17.
Life and work of the late Doctor Selwyn, Ami, 38.
Lime and cement industries of New York, Ries, 4.
Limestones of southwestern Pennsylvania, Clapp, 4.

Bibliography—Continued.
List of reports and publications on the geology of Vermont, Perkins, 5.
List of works on the geology of Vermont, Perkins, 9.
Literature of Edestus, Eastman, 22.
Literature of structural materials, Eckel, 11.
Literature on petroleum, Teggart, 1.
Manual of the chemical analysis of rocks, Washington, 10.
Manufacture of clay products, Ries, 13.
Marble, slate, and granite industries of Vermont, Perkins, 1.
Marl-loess of lower Wabash Valley, Fuller and Clapp, 1.
Marine Pliocene and Pleistocene of San Pedro, Arnold, 2.
Marine Trias of western America, Smith (J. P.), 5.
Marine turtle Archelon, Wieland, 3.
Medford dike area, Wilson (A. W. G.), 1.
Meeting of Section E of American Association for the Advancement of Science, Hovey, 37.
Memoir of Alpheus Hyatt, Crosby, 10.
Memoir of Edward Waller Claypole, Comstock (T. B.), 1.
Memoir of Franklin Platt, Frazer, 2.
Memoir of George Mercer Dawson, Adams (F. D.), 6.
Memoir of J. Peter Lesley, Stevenson (J. J.), 2.
Memoir of James E. Mills, Branner, 7.
Memoir of Ralph Dupuy Lacoe, White (D.), 9.
Memoir of Theodore Greely White, Kemp, 18.
Memoir of Wilbur Clinton Knight, Barbour (E. H.), 10.
Memorial of the late Dr. Selwyn, Ami, 43.
Menominee district of Michigan, Bayley, 1.
Mesabi iron-bearing district of Minnesota, Leith, 4.
Middle Cambrian fossils, Woodward (H.), 1.
Mineral industries and geology of certain areas of Vermont, Perkins, 4.
Mineralogia Grœnlandica, Böggild, 5.
Mines and minerals of Guanajuato, Blake (W. P.), 7.
Mining in the Richmond coal basin, Virginia, Woodworth, 3.
Miocene deposits of Maryland, Shattuck, 10.
Mississippi River from Cape Girardeau to Head of Passes, Brown (R. M.), 3.
Molding sand, Eckel, 14.
Mollusca of Buda limestone, Shattuck, 8.
Molybdenite, Wells, 2.
La Montagne Pelée et ses éruptions, Lacroix, 20.

Bibliography—Continued.

Morphogenesis of Platystrophia, Cumings, 8.
Morphology of Madreporaria, septal sequence, Duerden, 8.
Morphology of the skull of Dimetrodon, Case, 11.
Mountain ranges of Great Basin, Davis (W. M.), 46.
Natural mounds or hog-wallows, Branner, 8.
Names of coals west of Mississippi River, Keyes, 19.
Nature of Edestus and related forms, Eastman, 13.
Newark system of the Pomperaug Valley, Hobbs, 2.
New Niobrara Taxochelys, Wieland, 12.
New York mineral localities, Whitlock, 2.
Nomenclature of the gold-bearing metamorphic series of Nova Scotia, Woodman, 1.
Nonmetallic minerals, Merrill (G. P.), 12.
North American geologic formation names, Weeks, 5.
North American plesiosaurs, Williston, 14.
North American species of the genus Equus, Gidley, 1.
Notes on mica, Corkill, 1.
Oberdevon Europas und Nordamerikas, Hartzell, 1.
Observations on the Creodonta, Matthew (W. D.), 1.
Old channels of the Mississippi in Iowa, Leverett, 2.
Oligocene titanotheres, Osborn, 10.
Ore deposits of Sudbury, Dickson, 4.
Organization and work of the Geological Survey of Ohio, Orton, 1.
Origin of eskers, Crosby, 3.
Occurrence and distribution of tin, Hess and Graton, 1.
Osteology of Baptanodon, Gilmore, 3.
Osteology of the Diadectidæ and relations to Chelydosauria, Case, 12.
Paleozoic Appalachia, Willis, 1.
Papers read before the Geological Society of America, Shattuck, 9.
Peat, Parsons, 3.
Peat and its occurrence in New York, Ries, 7.
Pennsylvania anthracite coal field, Stoek, 1.
Permische Stegocephalen und Reptilien aus Texas, Broili, 2.
Phosphate rocks of Arkansas, Branner and Newsom, 1.
Physical features of Cecil County, Md., Shattuck, 3.
Physical geography, etc., of Essex County, Mass., Sears, 1.
Physical geography of New York State, Tarr, 2.

Bibliography—Continued.

Physical geology of central Ontario, Wilson (A. W. G.), 2.
Physiography of Acadia, Daly, 1.
Plateau province of Utah and Arizona, Davis (W. M.), 45.
Platygonus compressus Le Conte, Wagner, 1.
Pleistocene features in the Syracuse region, Fairchild, 12.
Pleistocene geology of Nassau County, Woodworth, 2.
Portland-cement industry in Michigan, Russell, 6.
Portland-cement materials of Alabama, Smith (E. A.), 8.
Pre-Cambrian literature for 1902–3, Leith, 9.
Pre-Cambrian summaries for 1901, Leith, 3.
Pre-Glacial course of middle portion of Genesee River, Whitbeck, 1.
Pre-Kansan and Iowan deposits of Long Island, N. Y., Fuller (M. L.), 6.
Progress of vertebrate paleontology in Canada, Lambe, 12.
Pseudoceratites of the Cretaceous, Hyatt, 1.
Publications of U. S. Geological Survey, 1901–1903, Warman, 2.
Quantitative classification of igneous rocks, Cross and others, 2.
Recent literature on Laramie formation, Hay, 7.
Recent mineralogical literature, Moses and Luquer, 1, 3.
Reconnaissance in Alaska, Schrader, 3.
Reconnaissance in trans-Pecos Texas, Richardson (G. B.), 4.
Reconstruction of a Cretaceous dinosaur, Beecher, 6.
Red Beds of Colorado, Cross and Howe, 2.
Relationships of the Rugosa (Tetracoralla) to living Zoantheæ, Duerden, 3.
Report of State geologist of Nebraska, Barbour (E. H.), 8.
Report of State geologist, Buckley, 4.
Reports of explorations printed in the documents of the United States Government, Hasse, 1.
Restoration of Dolichorhyncops osborni, Williston, 9.
Revision of Paleozoic Paleechinoidea, Klem, 1.
River terraces in New England, Davis (W. M.), 29.
Rocks of Green Pond Mountain region, Kümmel and Weller, 2.
Rocks of Rondout, Van Ingen and Clark, 1.
St. Peter sandstone, Sardeson, 1.
Sand plains of Glacial Lake Sudbury, Goldthwait, 1.

Bibliography—Continued.
- Sediments of the Meguma series of Nova Scotia, Woodman, 2.
- Siluric and Devonic faunas of Trilobite Mountain, Shimer, 5.
- Siluric fauna near Batesville, Ark., Van Ingen, 1, 2.
- Sketch of life and work of Charles Baker Adams, Seely, 4.
- Sketch of the life of Zadoch Thompson, Perkins, 3.
- Structural relations of amygdaloidal melaphyre, Burr, 1.
- Structure of some primitive cephalopods, Ruedemann, 9.
- Studies in evolution, Beecher, 1.
- Sulphide ore bodies of Sudbury region, Ontario, Silver, 1.
- Summaries of current North American pre-Cambrian literature, Leith, 1.
- Summaries of literature of economic geology, Eckel, 12.
- Summary of literature of North American Pleistocene geology, Leverett, 5.
- Surface geology of Alcona County, Mich., Leverett, 3.
- Syllabus for field and laboratory work in geology, Tarr, 1.
- Taconic physiography, Dale, 9.
- Tertiary history of the Tennessee River, Johnson (D. W.), 9.
- Tertiary lignite of Brandon, Perkins, 17.
- Terranes of Orange County, Vermont, Richardson (C. H.), 2.
- Theories of ore deposition, Emmons (S. F.), 15.
- Time divisions of Ice Age, Upham, 5.
- Tin deposits of the York region, Alaska, Collier, 8.
- Triassic cephalopod genera, Hyatt and Smith, 1.
- Triassic Ichthyopterygia from California and Nevada, Merriam (J. C.), 4.
- Trilobites of Chazy limestone, Raymond, 5.
- Troost's survey of Philadelphia, Hamilton (S. H.), 1.
- Tropidoleptus fauna at Canandaigua Lake, Raymond (P. E.), 4.
- Überschiebungen in den Vereinigten Staaten von Nordamerika, Willis, 14.
- United States Geological Survey, U. S. G. S., 2.
- Vermilion iron-bearing district of Minnesota, Clements, 3.
- Volcanic action and the West Indian eruptions in 1902, Lobley, 1.
- Volcanic ash beds of Montana, Rowe, 1.
- Volcanic eruptions in Martinique and St. Vincent, Russell, 4.
- White (Theodore Greely), Ries, 2.
- Wilbur Clinton Knight, Nelson, 1.
- Wilbur Clinton Knight, Williston, 20.

Bibliography—Continued.
- Writings of James G. Cooper on conchology and paleontology, Raymond (W. J.), 1.
- Xinantacatl ou volcan Nevado de Toluca, Ordóñez, 7.

Biography.
- Adams, Charles Baker, sketch of life and work of, Seely, 4.
- Bain, Francis, Watson (L. W.), 2.
- Barris, Prof. W. H., Preston (C. H.), 1.
- Beecher, Charles Emerson, Clarke (J. M.), 22.
- Beecher, Charles Emerson, Jackson (R. T.), 1.
- Beecher, Charles Emerson, Schuchert, 9.
- Billings, Elkanah, Ami, 15.
- Brooks, Thomas Benton, Willis, 3.
- Claypole, address at presentation of memorial bronze of Edward Waller Claypole, Bridge, 2.
- Claypole, address at presentation of memorial bronze of Edward Waller Claypole, Knight (W. H.), 1.
- Claypole, Edward Waller, Winchell (N. H.), 4.
- Claypole, Edward, the scientist, Comstock (F. B.), 2.
- Claypole, Edward Waller, as a teacher, Richardson (G. M.), 1.
- Claypole, Edward, the man, Bridge, 1.
- Claypole, Edward Waller, memoir of, Comstock (T. B.), 1.
- Dawson, George M., Adams (F. D.), 1.
- Dawson, George Mercer, Ami, 6.
- Dawson, George Mercer, Harrington (B. J.), 1, 2.
- Dawson, George Mercer, memoir of, Adams (F. D.), 6.
- Dawson, Sir John William, Adams (F. D.), 3.
- Frazier, Benjamin West, Frazer, 10.
- Frenzel, Dr., Frazer, 4.
- Hall, Charles Monroe. Life and work of Professor Charles M. Hall, Upham, 15.
- Harris, Israel Hopkins. The I. H. Harris collection of invertebrate fossils in the U. S. National Museum, Schuchert, 3.
- Hatcher, John Bell, Eaton, 4.
- Hatcher, John Bell, Holland, 1.
- Hatcher, John Bell, Schuchert, 15.
- Hatcher, John Bell, Scott (W. B.), 3.
- Herrick, Clarence L., Cole (A. D.), 1.
- Herrick, Clarence Luther, Tight, 5.
- Houghton, Douglass, Russell, 16.
- Hubbard, Bela, Russell, 17.
- Hyatt, Memorial of Prof. Alpheus Hyatt, Boston Soc. Nat. Hist., 1.
- Hyatt, Alpheus, Dall, 5.
- Hyatt, Alpheus, Crosby, 10.
- Hyatt, Alpheus, Stanton, 5.
- King, Clarence, Emmons (S. F.), 5, 6.

Biography—Continued.
King, Clarence, biographical notice of, Raymond (R. W.), 3.
Knight, Wilbur Clinton, Barbour (E. H.), 10.
Knight, Wilbur Clinton, Nelson, 1.
Knight, Wilbur Clinton, Williston, 20.
Lacoe, Ralph Dupuy, Hayden, 1.
Lacoe, Ralph Dupuy, memoir of, White (D.), 9.
Lacoe's relation to science, White (D.), 3.
Le Conte, Joseph, Lawson (A. C.), 3.
Le Conte, biographical notice of Joseph Le Conte, Christy, 1.
Le Conte, autobiography, 3.
Le Conte, Joseph, Stevenson (J. J.), 3.
Lesley, J. Peter, biographical notice of, Lyman, 4.
Lesley, J. Peter, Frazer, 7.
Lesley, J. Peter, Halberstadt, 1.
Lesley, J. Peter, Stevenson (J. J.), 5, 7.
McCalley, Henry, Smith (E. A.), 7.
Marsh, Charles Othniel, Joly (H.), 1.
Memoir of Franklin Platt, Frazer, 2.
Memorial of the late Dr. Selwyn, Ami, 43.
Mills, James E., Branner, 7.
Orton, Edward, Hobbs, 7.
Neff, Peter, Cushing, 8.
Pettee, William Henry, Russell, 18.
Powell as an anthropologist, McGee, 4
Powell as an explorer, Van Hise, 10.
Powell as a geologist, Gilbert, 5.
Powell as a man, Langley, 1.
Powell as a soldier, Henderson (D. B.), 1.
Powell, John Wesley, Brewer (W. H.), 1.
Powell, John Wesley, Gilbert, 3, 4.
Powell, John Wesley, Merrill (G. P.), 8.
Powell, John Wesley, Walcott, 9, 10.
Roemer, Dr. Ferdinand von, the father of Texas geology: his life and work, Simonds, 2.
Rowe, Richard Burton, Prosser, 9.
Selwyn, Dr. Alfred R. C., Barlow, 5.
Selwyn, Doctor, life and work of, Ami, 38, 45.
Simpson, George Bancroft, Clarke (J. M.), 6.
Thompson, Zadoch, Perkins, 3.
Troost, Gerard, Glenn, 9.
White, Theodore Greely, Ries, 2.
White, Theodore Greely, memoir of, Kemp, 16, 18.
Wing, Augustus, sketch of life and work of, Seely, 1.
Wright, Albert Allen, Wright (G. F.), 12.

California.
Age of granites in the Klamath Mountains, Hershey, 3.
Ancient gravel channels of Calaveras County, Storms, 4.

California—Continued.
Arcas of the California Neocene, Osmont, 2.
Arid district between Rio Grande and Pacific, Carter (O. S. C.), 5.
Ascent of Mt. Whitney, with notes on the geology, Hallock, 2.
Asymmetry of crest lines in the high Sierra of California, Gilbert, 19.
Auriferous gravels and table mountains of California, Hanks, 1.
Basin-range structure in Death Valley region, Campbell (M. R.), 13.
Berkeley Hills, Lawson and Palache, 1.
Bibliography of geology, paleontology, and mineral resources of California, Vogdes, 1.
Bismuth and bismite from Pala, Kunz, 6.
Borax deposits of eastern California, Campbell (M. R.), 12.
Books relating to geology, etc., of California, Vogdes, 2.
Border line between the Paleozoic and Mesozoic, Smith (J. P.), 1.
Bragdon formation, Diller, 18.
Bragdon formation in California, Hershey, 21.
California minerals, Schaller, 3.
Californian Tertiary coral reef, Vaughan, 20.
Californite, Clarke and Steiger, 2.
Californite, a new ornamental stone, Kunz, 5.
Canidæ of California, Merriam (J. C.), 7.
Canyon City meteorite, Ward (H. A.), 7.
Cement materials and industry of the United States, Eckel, 34.
Clastic dikes, Newsom, 4.
Coal fields of Pacific coast, Smith (G. O.), 6.
Colemanite from southern California, Eakle, 2.
Composition and occurrence of petroleum, Mabery, 3.
Composition and structure of Klamath Mountains, Diller, 17.
Composition of California petroleum, Mabery and Hudson, 1.
Contact-metamorphic deposits in Sierra Nevada Mountains, Turner, 13.
Contribution to mineralogy of California, Blasdale, 1.
Copper deposits of Redding region, Diller, 13.
Copper region of northern California, Diller, 5, 6.
Cretaceous auriferous conglomerate of Siskiyou County, Turner, 12.
Cretaceous deposits of Pacific coast, Anderson (F. M.), 3.
Crystalline rocks of southern California, Hershey, 9.
Crystalline rocks of San Gabriel Mountains, Arnold, 6.

California—Continued.

- Crystalline rocks of the San Gabriel Mountains, Arnold and Strong, 1.
- Crystallography of lepidolite, Schaller, 6.
- Desert dry lakes of California, Bailey (G. E.), 1.
- Domes and dome structure of the high Sierra, Gilbert, 17.
- Drainage features of California, Lawson (A. C.), 2.
- Dredging in Oroville, Knox, 1.
- Dumortierite, Schaller, 5, 7.
- Eclogites in California, Holway, 1.
- Erosion on the Pacific coast, Holder, 2.
- État de Californie, Privat-Deschanel, 1.
- Exploration of Potter Creek cave, Shasta County, Sinclair, 2.
- Fault-system, Gunther, 2.
- Feldspar-corundum rocks from Plumas County, Lawson (A. C.), 1.
- Faunal relations of the Carrizo Creek beds, Arnold, 3.
- Flightless auk, Mancalla californiensis, Lucas (F. A.), 5.
- Foraminifera from Santa Barbara, Bagg, 7.
- Formation of bonanzas in upper portions of gold veins, Rickard (T. A.), 3.
- Fossil plants from the Shasta group, Fontaine, 3.
- Fossil Sequoia from the Sierra Nevada, Jeffrey, 1.
- Gems and rare minerals of southern California, Sovereign, 1.
- Gem minerals of California, Kunz, 8.
- Genesis of ore deposits at the Royal mine, Forstner, 1
- Geological section of the middle Coast ranges of California, Lawson (A. C.), 6, 9.
- Geological section of the Coast ranges, Osmont, 1.
- Geologizing by the seaside, Lakes, 56.
- Geology of district west of Redding, O'Brien (C. J.), 1.
- Geology of Mineral King, Knopf and Thelen, 1.
- Geology of Nevada and adjacent portions of California, Spurr, 6.
- Geology of Salinas Valley, Nutter, 1.
- Geology of the Great Basin, Turner, 1.
- Geomorphogeny of Kern basin, Lawson (A. C.), 10.
- Geomorphogeny of Klamath Mountains, Diller, 3.
- Gisements des minerais de mercure, Demaret, 2.
- Glacial stages in Klamath Mountains, Hershey, 16.
- Glacier of Mount Lyell, Lee (W. T.), 10.
- Glaucophane and associated schists in Coast ranges of California, Nutter and Barber, 1.

California—Continued.

- Gold production of North America, Lindgren, 16.
- Great lava flood, Redway, 1.
- Greenback copper mine, Turner, 6.
- Gypsum deposits in California, Fairbanks, 6.
- Hanging valleys of the Yosemite, Branner, 5.
- Ichthyosauria from Triassic of California, Merriam (J. C.), 6.
- Identity of palacheite and botryogen, Eakle, 3.
- Igneous rocks near Pajaro, Reid (J. A.), 1.
- Industrie du pétrole en Californie, Heurteau, 2.
- Iron-nickel alloy, awaruite, Jamieson, 1.
- Iron ores of the Redding quadrangle, Diller, 14.
- Klamath Mountains, Diller, 1, 12.
- Lawsonite, Schaller and Hillebrand, 2.
- Les anciens chenaux aurifères de Californie, Bordeaux, 1.
- Lilac-colored spodumene, Kunz, 7.
- Limestone of the Redding district, Diller, 15.
- Luminescent zinc-blend, Eakle and Sharwood, 1.
- Magnesite and its uses, Spinks, 1.
- Mammalia from Quaternary caves of California, Sinclair, 7.
- Marine Pliocene and Pleistocene of San Pedro, Arnold, 2.
- Marine Pliocene and Pleistocene stratigraphy of coast of southern California, Arnold and Arnold, 1.
- Marine reptiles, Merriam (J. C.), 12.
- Marine Trias of western America, Smith (J. P.), 5.
- Metamorphic formations of northwestern California, Hershey, 2.
- Miocene diabase of Santa Cruz Mountains, Haehl and Arnold, 1.
- Miocene fauna in California, Merriam (J. C.), 10.
- Mineral resources of the Indian Valley region, Diller, 19.
- Mineral resources of the Redding quadrangle, Diller, 16.
- Minerals from Leona Heights, Shaller, 1.
- Miocene Foraminifera from Monterey shale, Bagg, 9.
- Mother Lode gold deposits, Prichard (W. R.), 1.
- Mother Lode gold deposits, Turner, 14.
- Mother Lode in Tuolumne County, Storms, 3.
- Mount Lassen and cinder cone region, Miller (E. L.), 1.
- Mount Diablo Range of California, Anderson (F. M.), 7
- Natronsalpeter in Californien, Ochsenius, 2.
- Neocene basins of Klamath Mountains, Anderson (F. M.), 1.

California—Continued.
Neocene deposits of Klamath region, Hershey, 13.
Neocene rivers of the Sierra Nevada, Lindgren, 10.
New Californian Bittium, Dall and Bartsch, 1.
New sabre-tooth from California, Merriam (J. C.), 16.
New species of Pleurotoma from the Pliocene, Raymond (W. J.), 2.
New ungulate from the Quaternary caves of California, Sinclair and Furlong, 1.
Occurrence of platinum, Day (D. T.), 1.
Oil fields of California, Lakes, 10.
On northupite, pirssonite, etc., Pratt, 3.
Orbicular gabbro at Dehesa, Lawson (A. C.), 11.
Orbicular gabbro from San Diego County, Lawson (A. C.), 7.
Orbicular gabbro of Dehesa, Kessler and Hamilton, 1.
Ore deposits of Shasta County, Anderson (F. M.), 4.
Origin and occurrence of petroleum, Cooper (A. S.), 1.
Origin of transverse mountain valleys, Le Conte, 1.
Palacheite, Eakle, 4.
Paleontology of Martinez group, Weaver, 1.
Pedalogical geology of California, Hilgard, 2.
Pegmatite veins of Pala, Waring, 2.
Petroleum fields of California, Eldridge, 4.
Petroleum in California, Claypole, 3.
Petroleum in California, Prutzman, 1.
Petroleum industry of California, Eldridge, 2.
Petroleum industry of Europe and America, Otsuka, 1.
Phosphorescent sphalerite, Eakle, 6.
Physiography and geology of the Siskiyou Range, Anderson (F. M.), 5.
Physiography of California, Fairbanks, 3.
Pleistocene and Pliocene fossil shells, Rivers, 1.
Plumasite, Lawson (A. C.), 8.
Post-Tertiary elevation of the Sierra Nevada, Turner, 10.
Post-Tertiary elevation of Sierra Nevada, Turner, 9.
Potter Creek cave, Sinclair, 5.
Prehistoric California, Yates (L. G.), 1.
Preptoceras, a new ungulate, Furlong, 2.
Profile of maturity in Alpine glacial erosion, Johnson (W. D.), 3.
Quartz from San Diego County, Waring, 1.
Quaternary of southern California, Hershey, 14.
Quicksilver, Haverstock, 1.

California—Continued.
Quicksilver deposits of California, Forstner, 2.
Recent date of lava flows in California, Wright (G. F.), 14.
Reconnaissance of borax deposits of Death Valley and Mohave Desert, Campbell (M. R.), 4.
Remarkable salt deposit, Holder, 1.
Reptile from Triassic of California, Merriam (J. C.), 11.
River terraces and Glacial series in California, Hershey, 19.
River terraces of Klamath region, Hershey, 20.
River terraces of the Orleans basin, Hershey, 22.
Roofing slate of igneous origin, Eckel, 27.
Salt industry in Utah and California, Eckel, 26.
San Luis folio, Fairbanks, 7.
Sierra Madre, near Pasadena, Claypole, 4.
Sierran valleys of Klamath region, Hershey, 18.
Significance of Cretaceous outliers in Klamath region, Hershey, 11.
Slate deposits of California and Utah, Eckel, 24.
Southern Nevada and Inyo County, Taft, 1.
Spodumene from San Diego County, Schaller, 2.
Stratigraphy of Coast ranges of California, Anderson (F. M.), 6.
Structural features of California gold belt, Storms, 1.
Structure of Klamath Mountains, Hershey, 17.
Subsidence of Santa Catalina, Ritter (W. E.), 1.
Terraces of the High Sierra, Gilbert, 24.
Tertiary formations of southern California, Hershey, 10.
Tertiary peneplain in Klamath region, California, Hershey, 15.
Thalattosauria, Merriam (J. C.), 15.
Topographic development of Klamath Mountains, Diller, 10.
Tortoise from the auriferous gravels, Sinclair, 4.
Tourmaline from San Diego County, Sterrett, 1.
Tourmaline localities of southern California, Schaller, 4.
Triassic Ichthyopterygia from California and Nevada, Merriam (J. C.), 4.
Triassic ichthyosaurs from California and Nevada, Osborn, 15.
Triassic Reptilia from northern California, Merriam, (J. C.), 5.
Tychite, Penfield and Jamieson, 1.
Type of auriferous deposit, Hershey, 7.
Valley of southern California, Hilgard, 5.

California—Continued.
- Variability in a rock magma, Turner, 8.
- Variations of Sierra glaciers, Gilbert, 18.
- Water storage in Truckee Basin, Taylor (L. H.), 1.

Cambrian.
- *Appalachian region.*
  - Asheville folio, Keith, 9.
  - Basal conglomerate in Lehigh and Northampton counties, Pa., Peck, 2, 3.
  - Bauxite deposits of Georgia, Watson (T. L.), 12.
  - Cambro-Ordovician limestones of the Valley of Virginia, Campbell (H. D.), 1.
  - Cockeysville marble, Matthews and Miller, 1.
  - Correlation of Piedmont formations, Mathews, 6.
  - Cranberry folio, Keith, 4.
  - Geologic relations of the iron ores in the Cartersville district, Hayes (C. W.) 1.
  - Greeneville folio, Keith, 11.
  - Lead and zinc deposits of Virginia, Watson (T. L.), 17.
  - Manganese ore deposits of Georgia, Watson, 9.
  - Maynardville folio, Keith, 1.
  - Mount Mitchell folio, Keith, 12.
  - Paleozoic Appalachia, Willis, 1.
  - Paleozoic faunas, Weller, 6.
  - Paleozoic limestones of Kittatinny valley, Kümmel and Weller 1.
  - Piedmont district of Pennsylvania, Bascom, 3.
  - Preliminary report on the Paleozoic formations, Weller, 3.
  - Rocks of Green Pond Mountain region, Kümmel and Weller, 2.
  - Rome folio, Hayes (C. W.), 5.
  - Topography and geology of southern Appalachians, Keith, 3.
- *Canada.*
  - Adams Lake series, Evans (H. F.), 2.
  - Cambrian age of Dictyonema slates of New Canaan and Kentville, Nova Scotia, Ami, 32.
  - Cambrian fossils from Cape Breton, Matthew (G. F.), 9.
  - Cambrian of Cape Breton, with descriptions of new species, Matthew (G. F.), 12.
  - Cambrian rocks and fossils of Cape Breton, Matthew (G. F.), 14.
  - Cambrian rocks in eastern Canada, Matthew (G. F.), 29.
  - Cambrian rocks of Cape Breton, Matthew (G. F.), 20.
  - Explorations in Saskatchewan and Keewatin, Tyrrell, 3.
  - Exploration of east coast of Hudson Bay, Low, 2.
  - Exploration of Ekwan River, Dowling, 8.

Cambrian—Continued.
- *Canada*—Continued.
  - Geological correlations in New Brunswick, Bailey (L. W.), 3.
  - Geological explorations in Athabaska, Dowling, 6.
  - Geological record of Rocky Mountain region, Dawson, 2.
  - Geologie von Canada, Haas, 2.
  - Geology and natural resources of Ottawa and vicinity, Ells (R. W.), 7.
  - Geology of Boisdale Hills anticline, Boright, 1.
  - Geology of Province of Quebec, Ells (R. W.), 8.
  - Geology of Yellow Head Pass route, McEvoy, 1.
  - Middle Cambrian fossils, Woodward (H.), 1.
  - New Brunswick, Bailey (L. W.), 5.
  - Northeastern Canada to the Arctic coast, Hanbury, 1.
  - Ostracoda of basal Cambrian rocks in Cape Breton, Matthew (G. F.), 13.
  - Rock contacts in the Kingston district, Ells (R. W.), 15.
  - Subdivisions of the Cambrian system, Ami, 13.
  - Synopsis of geology of Canada, Ami, 2.
  - Upper Cambrian age of Dictyonema slates of Angus Brook, Ami, 37.
- *Great Basin region.*
  - Bisbee folio, Ransome, 14.
  - Clifton folio, Lindgren, 28.
  - Copper deposits of Clifton-Morenci district, Lindgren, 29.
  - Evidences of shallow seas in Paleozoic time, Blake (W. P.), 2.
  - Geology and copper deposits of Bisbee, Ransome, 10.
  - Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
  - Geology and vein phenomena of Arizona, Comstock (T. B.), 1.
  - Geology of Arizona, Blake (W. P.), 1.
  - Geology of Globe copper district, Ransome, 6.
  - Geology of Nevada, Spurr, 6.
  - Globe folio, Ransome, 13.
  - Historical geology of Esmeralda County, Nev., Turner, 5.
  - Paleozoic rocks of Great Basin region, Weeks, 9.
  - Stratigraphy of Uinta Mountains, Berkey, 8.
- *Great Lakes region.*
  - Baraboo iron-bearing district of Wisconsin, Weidman, 5.
  - Chicago folio, Alden, 1.
  - Geology of Michigan, Lane, 36.
  - Menominee district of Michigan, Bayley, 1.
- *Great Plains region.*
  - Geology and underground water resources of the central Great Plains, Darton, 18.

Cambrian—Continued.
- *Great Plains region*—Continued.
  - Geology of the Black Hills, Jaggar, 5.
  - Sundance folio, Darton, 26.
- *Lake Superior region.*
  - Junction of Lake Superior sandstone and Keweenawan traps in Wisconsin, Grant (U. S.), 2.
  - Magnesian series of the northwestern States, Hall (C. W.), 10.
- *Mississippi Valley region.*
  - Cambrian age of magnesian limestones of Missouri, Keyes, 23.
  - Cambrian fossils of St. François County, Beecher, 2.
  - Copper deposits of Missouri, Bain and Ulrich, 2.
  - Dalles of the St. Croix, Berkey, 1.
  - Geological formations of Iowa, Calvin, 4.
  - Geological relations and age of St. Joseph and Potosi limestones of Missouri, Nason, 5.
  - Geology of clays, Beyer and Williams, 2.
  - Geology of Hahatonka district, Scherer, 1.
  - Geology of Minnesota, Hall (C. W.), 7.
  - Geology of Miller County, Ball and Smith, 1.
  - Geology of Missouri, Gallaher, 1.
  - Geology of Moniteau County, Van Horn, 1.
  - Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
  - Lead and zinc deposits of southwestern Wisconsin, Grant (U. S.), 5.
  - Physiography and geology of Ozark region, Adams (G. I.), 3.
  - Relations and age of the St. Joseph and Potosi limestones, Nason, 2.
  - Rocks and geological horizons of Greene County, Shepard, 6.
  - Saccharoidal sandstone, Broadhead, 8.
- *New England and New York.*
  - Cambrian deposits of North Attleboro, Gorham, 1.
  - Cambrian and pre-Cambrian of Hoosac Mountains, Wolff, 3.
  - Cambric Dictyonema fauna of eastern New York, Ruedemann, 7.
  - Geology of Adirondack region, Cushing, 10.
  - Geology of Paradox Lake quadrangle, Ogilvie, 6.
  - Geology of Rand Hill, Cushing, 2.
  - Geology of Taconic Range, Dale, 3.
  - Geology of the Hudson Valley, Dale, 5.
  - Geology of the vicinity of Little Falls, Cushing, 9.
  - Geology of the Weston aqueduct, Crosby, 12.
  - Igneous rocks of Neponset Valley, Crosby, 15.
  - Physical geography, etc., of Essex County, Mass., Sears, 1.
  - Pre-Cambrian Highlands, Merrill (F. J. H.), 6.

Cambrian—Continued.
- *New England and New York*—Continued.
  - Potsdam sandstone of Lake Champlain Basin, Van Ingen, 4.
  - Quarry industry in southeastern New York, Eckel, 6.
  - Report of State paleontologist, Clarke (J. M.), 5.
  - Sedentary impression known as Climactichnites, Woodworth, 6.
- *Pacific coast region.*
  - Crystalline rocks of southern California, Hershey, 9.
- *Rocky Mountain region.*
  - Aladdin folio, Darton and O'Harra, 1.
  - Geology and ore deposits of Elkhorn mining district, Montana, Weed, 5.
  - Carboniferous formations and faunas of Colorado, Girty, 3.
  - Geology of Black Hills, Darton, 1.
  - Geology of Castle Rock region, Colorado, Lee (W. T.), 2.
  - Geology of Needle Mountains quadrangle, Cross and Howe, 3.
  - Geology of Rico quadrangle, Cross (W.), 7.
  - Geology of southwestern Montana, Douglass, 10.
  - Silverton folio, Cross and Howe, 1.
  - Stratigraphy of Black Hills, Bighorn Mountains, and Rocky Mountain front range, Darton, 16.
  - Sundance folio, Darton, 26.
- *Southwestern region.*
  - Atoka folio, Taff, 3.
  - Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
  - Geology and water resources of Oklahoma, Gould, 14.
  - Geology of Arbuckle and Wichita mountains, Taff, 13.
  - Geology of the Wichita Mountains, Gould, 13.
  - Nomenclature of the Cambrian formations of the St. François Mountains, Keyes, 6.
  - Stratigraphic sequence in trans-Pecos Texas, Richardson (G. B.), 5.
  - Tishomingo folio, Taff, 6.
- *General.*
  - Cambrian Brachiopoda, Walcott, 6.
  - Cambric Dictyonema fauna of New York, Matthew (G. F.), 31.
  - New term for Upper Cambrian series, Walcott, 8.
  - Physical characters and history of some New York formations, Grabau, 17.
  - Verbreitung und Entwickelung des Cambrium, Frech, 1.

Canada.
- *Alberta.*
  - Alberta coal field, Armstrong, 1.
  - Bankhead coal mines, Henretta, 1.
  - Cascade and Costigan coal basins, Dowling, 11.
  - Coal basins in Rocky Mountains, Dowling, 7.

- **Canada**—Continued.
  - *Alberta*—Continued.
    - Coal in Alberta, Rickert, 1.
    - Dinosaurs from the Cretaceous of Alberta, Lambe, 10.
    - Fossil Cyrena from Alberta, Whiteaves, 6.
    - Frank disaster, Fernie, 1.
    - Frank disaster, Green, 1.
    - Frank disaster, Smith (F. B.), 2.
    - Glacial studies in the Canadian Rockies, Sherzer, 2.
    - Geological notes on the vicinity of Banff, Ogilvie, 3.
    - Geological sketch of the Bankhead coal field, Turnbull, 1.
    - Geology of Anthracite, Alberta, Poole, 5.
    - Geology of Yellow Head Pass route, McEvoy, 1.
    - Grasping power of manus of Ornithomimus, Lambe, 9.
    - Lake basins in Alberta and British Columbia, Parkinson, 2.
    - Notes on western coals, Gwillim, 4.
    - Red Deer River, Lambe, 4.
    - Report on landslide at Frank, McConnell and Brock, 4.
    - Rock slide at Frank, Brewer (W. M.), 10.
    - Rock slide at Frank, Haanel, 1.
    - Squamoso-parietal crest of horned dinosaurs, Lambe, 11.
    - Stratigraphy of the Cascade coal basin, Dowling, 10.
    - Trionyx foveatus, Leidy, and Trionyx vagans, Cope, from Cretaceous rocks, Lambe, 5.
    - Turtle from the Cretaceous rocks, Lambe, 1.
    - Turtle Mountain rock slide, Dowlen, 1.
    - Variations périodiques des glaciers, Vaux and Vaux, 2.
  - *Assiniboia.*
    - Coal field of Souris River, Dowling, 9.
    - Eastern Assiniboia and southern Manitoba, Dowling, 4.
    - Fossil horses of the Oligocene, Lambe, 16.
    - New species of Hyracodon, Lambe, 17.
    - Tooth structure of Mesohippus westoni (Cope), Lambe, 14.
  - *Athabasca.*
    - Geological explorations in Athabasca, Dowling, 6.
  - *British Columbia.*
    - Adams Lake series, Evans (H. F.), 2.
    - Atlin mining district, Gwillim, 1.
    - Auriferous deposits of Vancouver Island, Watson (R. L.), 1.
    - Bornite ores of British Columbia and Yukon territory, Brewer, 16.
    - Boundary Creek district, Brock, 1, 3.
    - Boundary mining district, Brewer (W. M.), 8.
    - British Columbia coal fields, Brewer (W. M.), 6.
- **Canada**—Continued.
  - *British Columbia*—Continued.
    - British Columbia iron and coal, Brewer (W. M.), 2.
    - Cambrian Brachiopoda and Mollusca of Mount Stephen, Matthew (G. F.), 19.
    - Cardioceras from the Crows Nest coal fields, Whiteaves, 9.
    - Characteristics of Atlin gold fields, Gwillim, 2.
    - Cinnabar-bearing rocks of British Columbia, Monckton, 2.
    - Coal Creek colliery of Crows Nest Pass, Corless, 1.
    - Coal fields of Cook Inlet, Alaska, and Pacific coast, Kirsopp, 1.
    - Coal fields of Crows Nest Pass, Jacobs, 2.
    - Coal fields of Crows Nest Pass Branch of Canadian Pacific Railway, Brewer (W. M.), 9.
    - Coal mining in the Crows Nest, McEvoy, 2.
    - Copper claims of Aspen Grove and Aberdeen Camp, Johnston (R. A. A.), 2.
    - Copper deposits of Aspen Grove camp, Similkameen, Bailey (F.), 1.
    - Copper deposits of Mount Sicker, Musgrave, 1.
    - Copper Mountain, Catherinet, 1.
    - Crows Nest coal fields, Leach (W. W.), 1.
    - Crows Nest Pass coal field, Brewer (W. M.), 7.
    - Fossil plants from British Columbia and the Northwest territories, Penhallow and Ami, 1.
    - Fossils from the Vancouver Cretaceous, Whiteaves, 12.
    - Genesis of gold deposits of Baskerville, Atkin, 1.
    - Geology and mining of Vancouver Island, Sutton, 1.
    - Geology of region adjoining western part of International Boundary, Daly, 4.
    - Geology of the International Boundary, Daly, 10.
    - Geology of western part of International Boundary, Daly, 13.
    - Geology of Yellow Head Pass route, McEvoy, 1.
    - Geology of Vancouver Island, Haycock, 3.
    - Geology of Vancouver Island, Webster, 1.
    - Glaciation in Atlin district, Gwillim, 3.
    - Glacial studies in the Canadian Rockies, Sherzer, 2.
    - Gold occurrences on Lightning Creek, Atkin, 2.
    - Graham Island coal, Blakemore, 3.
    - Industries minière et metallurgique en Colombie britannique, Vicaire, 1.
    - Iron-ore deposits near Kitchener, Blakemore, 2.

Canada—Continued.
British Columbia—Continued.
Lake basins in Alberta and British Columbia, Parkinson, 2.
Lamprophyres of the Rossland mining district, Barber, 1.
Lardeau district, Brock, 7, 8.
M'Kee Creek, Atlin mining division, British Columbia, Brewer (W. M.), 5.
Mica deposits of Canada, Ells (R. W.), 21.
Middle Cambrian fossils, Woodward (H.), 1.
Mineral resources of Vancouver Island, Brewer (W. M.), 14.
Mining districts near Kemloops Lake, Monckton, 1.
Mining in the Rossland district, Campbell (C. M.), 1.
Mining industry and mineral resources of British Columbia, Brewer (W. M.), 8.
Mount Sicker mining district, Brewer (W. M.), 13.
Native gold in igneous rocks, Brock, 4.
Nepheline rocks of Ice River, Barlow, 4.
New species of Unio, Whiteaves, 1.
Nicola coal basin, Ells (R. W.), 23.
Notes on geology and ore deposits of southeastern British Columbia, Corless, 2.
Notes on western coals, Gwillim, 4.
Observations on glaciers, Vaux, 1.
Occurrence of scheelite, Atkin, 1.
Ordovician succession in eastern Ontario, Ami, 39.
Ore deposits of Boundary Creek district, Brock, 2.
Ore deposits of Copper Mountain, Scott (O. N.), 1.
Ore deposits of Rossland, Kirby, 2.
Ore deposits of Rossland, MacDonald, 1.
Ore quarrying in the Boundary district, Jacobs, 1.
Pacific Mountain system, Spencer (A. C.), 5.
Pacific Mountain system of British Columbia and Alaska, Spencer (A. C.), 4.
Petrography of Kettle River mining division, Silver, 2.
Petrography of rock samples from British Columbia, Robertson, 4.
Pioneer work in Crows Nest coal areas, Blakemore, 1.
Platinum in British Columbia, Brock, 6.
Poplar Creek and other camps of the Lardeau district, Brock, 5.
Production of copper in Boundary district, Ledoux, 2.
Report on the Lardeau mining district, Robertson, 3.
Report on the Trout Lake mining division, Robertson, 2.
Report on valley of the Flathead River, Robertson, 1.

Canada—Continued.
British Columbia—Continued.
Secondary origin of certain granites, Daly, 11.
Souesite, a native iron-nickel alloy, Hoffmann, 7.
Stratigraphy and igneous rocks of Alaska, Emerson (B. K.), 6.
Texada Island, Brewer (W. M.), 1.
Uintacrinus and Hemiaster in the Vancouver Cretaceous, Whiteaves, 15.
Variations périodiques des glaciers, Vaux and Vaux, 2.
White Horse mining district, Yukon Territory, Brewer (W. M.), 4.
Cape Breton Island.
Cambrian fossils from Cape Breton, Matthew (G. F.), 9.
Cambrian of Cape Breton, with descriptions of new species, Matthew (G. F.), 12.
Cambrian rocks and fossils of Cape Breton, Matthew (G. F.), 14.
Preliminary notice of Etcheminian fauna, Matthew (G. F.), 2.
Franklin.
Exploration of northern side of Hudson strait, Bell (Robert), 8.
Laurentian limestones, Bell (Robert), 2.
Keewatin.
Exploration of Ekwan River, Dowling, 8.
Explorations in Saskatchewan and Keewatin, Tyrrell, 3.
Genus Trimerella, with descriptions of species from Silurian rocks of Keewatin, Whiteaves, 3.
Geological explorations in Athabasca, Saskatchewan, and Keewatin, Dowling, 6.
Geological reconnoissance of Albany River, Wilson (A. W. G.), 5.
Headwaters of Severn River, Camsell, 2.
Report on parts of Manitoba and Keewatin, Tyrrell, 1.
Survey of south and west coast of James Bay, O'Sullivan, 1.
Upper parts of Winisk and Attawapiskat rivers, McInnes, 4.
Winisk River, McInnes, 3.
Labrador.
Drift ice as an eroding and transporting agent, Prest, 1.
Exploration of the south shore of Hudson Strait, Low, 1.
Geology of Labrador, Daly, 5.
Geology of northeast coast of Labrador, Daly, 3.
Manitoba.
Clays and shales of Manitoba, Wells (J. W.), 4.
Eastern Assiniboia and southern Manitoba, Dowling, 4.
Geography of Red River Valley, Dowling, 2.
Geology of west shore of Lake Winnipeg, Dowling, 1.

- **Canada**—Continued.
  - *Manitoba*—Continued.
    - Hydraulic cements in Manitoba, Wells (J. W.), 3.
    - Limestones and lime industry of Manitoba, Wells (J. W.), 5.
    - Report on parts of Manitoba and Keewatin, Tyrrell, 1.
    - Turtle Mountain, Manitoba, Dowling, 5.
  - *New Brunswick.*
    - Albert shale deposits, Ells (R. W.), 13.
    - Are the St. John plant beds Carboniferous?, Matthew (G. F.), 4.
    - Bothriolepis, Patten, 1.
    - Cambrian ostracoda from northeastern America, Jones (T. R.), 1.
    - Cambrian rocks in eastern Canada, Matthew (G. F.), 29.
    - Carboniferous basin of New Brunswick, Ells (R. W.), 3.
    - Carboniferous rocks of Chignecto Bay, Poole, 6.
    - Carboniferous system of New Brunswick, Bailey (L. W.), 8.
    - Charlotte County, Ells (R. W.), 17.
    - Coal fields of New Brunswick, Poole, 2.
    - Coal problem in New Brunswick, Poole, 3.
    - Coal prospects of New Brunswick, Poole, 8.
    - Copper ores in Nova Scotia, New Brunswick, and Quebec, Ells (R. W.), 22.
    - Devonian of the Acadian provinces, Matthew (G. F.), 3.
    - Earthquakes in New Brunswick, Kain, 1.
    - Economic minerals in New Brunswick, Bailey (L. W.), 11.
    - Geological correlations in New Brunswick, Bailey (L. W.), 2, 3.
    - Geological observations in northern New Brunswick, Bailey (L. W.), 6.
    - Geology of Charlotte County, Ells (R. W.), 24.
    - Highlands of northern New Brunswick, Bailey (L. W.), 7.
    - List of fossils from New Brunswick, Ami, 46.
    - Marl deposits, Ells (R. W.), 6.
    - Modes of occurrence of mineral albertite, Bailey (L. W.), 4.
    - Natural history and physiography of New Brunswick, Ganong, 3.
    - New Brunswick, Bailey (L. W.), 5.
    - New Brunswick caves, Bailey (L. W.), 9.
    - Note on Oliver's cave, Matthew (G. F.), 26.
    - Ostracoda of basal Cambrian rocks in Cape Breton, Matthew (G. F.), 13.
    - Physiography of New Brunswick, Ganong, 1, 2.
    - Problems in New Brunswick geology, Ells (R. W.), 25.
    - Report on surface geology shown on Frederickton and Andover quarter-sheet maps, Chalmers, 3.

- **Canada**—Continued.
  - *New Brunswick*—Continued.
    - Surface geology of New Brunswick, Stead, 1.
    - Tripolite deposits of Fitzgerald Lake, Crosby, 1.
    - Volcanic rocks of New Brunswick, Bailey (L. W.), 10.
  - *Northwest Territory.*
    - Coal mining in the Northwest territories, Smith (F. B.), 1.
    - Dryptosaurus incrassatus, Lambe, 8.
    - Fossil plants from British Columbia and the Northwest territories, Penhallow and Ami, 1.
    - Gold mining in Klondike, Miers, 2.
    - New vertebrates of the Mid-Cretaceous, Osborn, 13.
    - Region southwest of Fort Smith, Slave River, Camsell, 1.
  - *Nova Scotia.*
    - Batrachian footprints, Matthew (G. F.), 23.
    - Batrachian footprints of Carboniferous system, Matthew (G. F.), 21.
    - Bedded leads in relation to mining policy. Woodman, 3.
    - Boring machines, Weatherbe, 2.
    - Building stones of Nova Scotia, Gilpin, 2.
    - Cambrian rocks of Cape Breton, Matthew (G. F.), 20.
    - Carboniferous rocks of Chignecto Bay, Poole, 6.
    - Copper ores in Nova Scotia, New Brunswick, and Quebec, Ells (R. W.), 22.
    - Counties of Cumberland, Hants, Kings, and Annapolis, Fletcher, 6.
    - Description of tracks from the Knoydart formation, Ami, 3, 28.
    - Devonian of Canadian provinces, Ells (R. W.), 4.
    - Dictyonema slates of Angus Brook, New Canaan, and Kentville, Poole, 4.
    - Fossils, possibly Triassic, in bowlder-clay of Kings County, Haycock, 2.
    - Geological history of Gaspereau Valley, Haycock, 1.
    - Geological investigation in Nova Scotia, Ells (R. W.), 11.
    - Geological nomenclature in Nova Scotia, Fletcher, 1.
    - Geology of Boisdale Hills anticline, Boright, 1.
    - Geology of the Moose River gold district, Woodman, 4.
    - Gold fields of Nova Scotia, Faribault, 3, 4.
    - Ice-borne sediments in Minas basin, Bancroft (J. A.), 1.
    - Is there coal under Prince Edward Island?, Poole. 11.
    - Kings and Hants counties, Fletcher, 2.
    - Knoydart formation of Nova Scotia, Ami, 8.
    - Manganese mining in Nova Scotia, Jennison, 1.

Canada—Continued.
Nova Scotia—Continued.
Marl deposits, Ells (R. W.), 6.
Meso-Carboniferous age of the Union and Riversdale formations, Ami, 40.
Minerals of Nova Scotia, Gilpin, 1.
New geological formation in the Devonian, Ami, 4.
Nictaux iron field, Weatherbe, 1.
Nomenclature of the gold-bearing metamorphic series of Nova Scotia, Woodman, 1.
Northern part of Nova Scotia, Fletcher, 5.
Nova Scotia coals, Gilpin, 3.
Nova Scotia gold fields, Faribault, 1, 2.
Organic remains from Messenger Brook, Ami, 47.
Paleobotanical aspects of the upper Paleozoic, White (D.), 5.
Physiography of Acadia, Daly, 1.
Pictou coal field, Poole, 10.
Possible occurrence of coal area beneath Neo-Carboniferous, Nova Scotia, Ami, 29, 31.
Potter's clay at Middle Musquodoboit, Mason, 1.
Sediments of the Meguma series of Nova Scotia, Woodman, 2.
Stigmaria structure, Poole, 1.
Stratigraphy versus paleontology in Nova Scotia, Matthew (G. F.), 15.
Stratigraphy versus paleontology in Nova Scotia, White (D.), 7.
Surveys and explorations in Nova Scotia, Fletcher, 3.
Tracks from the Knoydart formation, Ami, 3.
Union and Riversdale formations in Nova Scotia, Ami, 30.
Upper Cambrian age of Dictyonema slates of Angus Brook, Ami, 37.
West Gore antimony deposits, Asquith, 1.
Workable coals of Nova Scotia, Fletcher, 4.
Ontario.
Abitibi region, Kay, 1.
Algonquin shore line in Simcoe County, Hunter, 1.
Ancient channels of Ottawa River, Ells (R. W.), 5.
Ancient drainage at Niagara Falls, Currie, 1.
Ancient lake beaches on islands in Georgian Bay, Comstock (F. M.), 2.
Annual report of geological section of Ottawa Field-Naturalists' Club, Ami, 25.
Areas of nepheline syenite, Miller (W. G.), 1.
Arsenic in Ontario, Wells (J. W.), 1.
Artesian borings, surface deposits, and ancient beaches in Ontario, Chalmers, 5.
Borings for natural gas, petroleum, and water, Chalmers, 4.

Canada—Continued.
Ontario—Continued.
Boston township iron range, Miller (W. G.), 15.
Bruce Mines district, Ingall, 8.
Bulletin on apatite, Ells (R. W.), 19.
Canadian fossil insects, Scudder, 1.
Cement industry of Ontario, Gillespie, 1.
Cobalt-nickel arsenides and silver deposits of Temiskaming, Miller (W. G.), 13.
Cobalt-nickel arsenides and silver in Ontario, Miller (W. G.), 8, 11.
Condition of nickel in nickeliferous pyrrhotite from Sudbury, Dixon, 1.
Coral reefs—modern and ancient, Grant (C. C.), 5.
Corniferous exposure in Anderdon, Nattress, 1.
Corundum and emery, Fuller (H. T.), 1.
Corundum in Ontario, Baker, 1.
Corundum in Ontario, Barlow, 10.
Corundum in Ontario, Kerr (D. G.), 1.
Cuspate forelands, Wilson (A. W. G.), 8.
Description of map of Ottawa district, Ami, 24.
Devonian fauna of Kwataboahegan River, Parks, 5.
District around Kingston, Ontario, Ells (R. W.), 9.
Duration of Toronto interglacial period, Coleman, 9.
Eastern Ontario, Miller (W. G.), 6.
Eastern Ontario gold belt, Miller (W. G.), 4.
Economic resources of Moose River basin, Bell (J. M.), 2.
Explorations in Abitibi, McMillan, 1.
Exploration of Ekwan River, Dowling, 8.
Exploration of the Ontario iron ranges, Willmott, 4.
Fossiliferous rocks of southwest Ontario, Parks, 4.
Genesis of Animikie iron range, Hille, 3.
Genus Panenka, with description of a species from Devonian rocks of Ontario, Whiteaves, 3.
Glacial beds near Toronto, Coleman, 1.
Glacial phenomena in eastern Ontario, Taylor (F. B.), 1.
Geological notes, etc., Grant (C. C.), 3, 6, 7.
Geology and natural resources of Ottawa and vicinity, Ells (R. W.), 7.
Geology of Bruce Mines district, Ingall, 6.
Geology of country around Bruce mines, Ingall and Denis, 1.
Geology of district from Lake Timiskaming northward, Parks, 8.
Geology of Michipicoten Island, Burwash, 1.

Canada—Continued.
Ontario—Continued.
Geology of Renfrew, Addington, Frontenac, Lanark, and Carleton counties, Ells (R. W.), 20.
Geology of the Sudbury district, Coleman, 20.
Geology of the Sudbury district, Hixon, 1.
Gold near Lake Superior, Lane, 35.
Gold ores of western Ontario, Brent, 1.
Graphite in Canada, Ells (R. W.), 18.
Haliburton and Bancroft areas, Ontario, Adams (F. D.), 5.
Hamilton group of Thedford, Shimer and Grabau,
Iron-bearing rocks in Ontario, Coleman, 15.
Iron belt west of Hutton, Culbert, 1.
Iron-ore deposits along Kingston and Pembroke Railway in eastern Ontario, Ingall, 4.
Iron-ore deposits of western Ontario, Hille, 1.
Iron-ore fields of Ontario, Miller (W. G.), 3.
Iron ores of Nipissing district, Miller (W. G.), 2.
Iron ranges of Michipicoten west, Bell (J. M.), 3.
Iron ranges of northern Ontario, Miller (W. G.), 9.
Iron ranges of northwestern Ontario, Coleman, 12.
Iron ranges of the Lower Huronian, Coleman, 4.
Iroquois beach in Ontario, Coleman, 16, 17.
Lake Temiscaming to Height of Land, Miller (W. G.), 5.
Laurentian limestones and granite of Haliburton County, Graton, 1.
Limestones of Ontario, Miller (W. G.), 14.
Little Current and Drowning rivers, Wilson (W. J.), 3.
Lists of fossils from Perth sheet, Ami, 49.
Lists of organic remains of Ottawa district, Ami, 20.
Loon Lake iron-bearing district, Smith (W. N.), 1.
Lytoceras from the Cretaceous rocks, Whiteaves, 2.
Marine and fresh-water beaches, Coleman, 2.
Marl deposits, Ells (R. W.), 6.
Meteorite from Shelburne, Johnston (R. A. A.), 3.
Mica, Cirkel, 4.
Mica deposits of Canada, Ells (R. W.), 21.
Michipicoten iron region, Coleman and Willmott, 1, 2.
Microscopic examination of sections of rocks, Barlow, 2.

Canada—Continued.
Ontario—Continued.
Mineral resources of Ontario, Miller (W. G.), 12.
Minerals of Ottawa Valley, Willimott, 1.
Michipicoten gold belt, Clarke (C. H.), 1.
Michipicoten Huronian area, Willmott, 1.
Mines of Ontario, Carter (W. E. H.), 1.
Mining developments in eastern Ontario, Thomas, 1.
Moose Mountain iron range, Leith, 6.
Nagagami River, Wilson (W. J.), 3.
New mineral area in Ontario, Hardman, 1.
New species of Matheria, Whiteaves, 8.
Nepheline and other syenites near Port Coldwell, Ontario, Coleman, 8.
Nepheline rock from Ontario, Adams (F. D.), 8.
Nepheline syenite in western Ontario, Miller (W. G.), 7.
Niagara Falls as an index of time, Grant (C. C.), 2.
Nickel and copper deposits of Sudbury, Barlow, 8.
Northern nickel range, Coleman, 18.
Notes from Burford Township, Yates (W.), 1.
Notes on mica, Corkill, 1.
Notes on past collecting season, Grant (C. C.), 9, 10.
Occurrence of hematite, Mills, 2.
Opening address, geologic section, Grant (C. C.), 1, 4.
Ore deposits of Sudbury, Dickson, 4.
Origin and relations of auriferous veins of Algoma (western Ontario), Crosby, 4.
Origin of veins in asbestiform serpentine, Merrill (G. P.), 14.
Parasite from Devonian rocks of Hudson Bay, Parks, 6.
Petroleum and natural gas (in Ontario), Corkill, 2.
Physical geology of central Ontario, Wilson (A. W. G.), 2.
Pleistocene deposits north of Lake Ontario, Wilson (A. W. G.), 11.
Platinum in nickel-copper ores, Dickson, 1.
Port Huron oil field, Gordon (C. H.), 2.
Pre-Cambrian rocks of Lake Temiskaming, Miller (W. G.), 16.
Prince Edward and Hastings counties, Ells (R. H.), 1.
Raised shore lines along Blue Mountain escarpment, Hunter, 2.
Raised shore lines of St. Lawrence Valley and Great Lakes, Chalmers, 6.
Recent folds in Lorraine shales, Wilson (A. W. G.), 4.
Region northeast of Nipigon Lake, Parks, 3.

Canada—Continued.

- *Ontario*—Continued.
  - Region northwest of Lake Nipigon, McInnes, 2.
  - Report on Lake Superior region, Van Hise and others, 1.
  - Rock basins of Helen mine, Michipicoten, Canada, Coleman, 11.
  - Rock movements in the Laurentian and Huronian areas, Mills (S. D.), 1.
  - Round Lake to Abitibi River, Bolton, 1.
  - Rock contacts in the Kingston district, Ells (R. W.), 15.
  - Sea beaches of eastern Ontario, Coleman, 5.
  - Secondary origin of certain granites, Daly, 11.
  - Shore features of Lake Huron, Jefferson, 3.
  - Shelburne meteorite, Borgström, 1.
  - Sperrylite, Wells, 1.
  - Stratigraphical note, Ami, 10.
  - Sudbury district, Barlow, 3.
  - Sudbury mining district, Barlow, 6.
  - Sudbury nickel deposits, Coleman, 14.
  - Sudbury nickel-bearing eruptive, Coleman, 19.
  - Sulphide ore bodies of Sudbury region, Silver, 1.
  - Survey of south and west coast of James Bay, O'Sullivan, 1.
  - Surveys between Rabbit and Temagami lakes, Young, 2.
  - Syenites near Port Coldwell, Coleman, 13.
  - Temagami district, Barlow, 7.
  - Trent River system, Wilson (A. W. G.), 9.
  - Types of iron-bearing rocks in Ontario, Coleman, 7.
  - Up and down the Mississaga, Graton, 2.
  - Vermilion River placers, Coleman, 3.
- *Prince Edward Island.*
  - Bathygnathus borealis Leidy and the Permian of Prince Edward Island, Case, 13.
  - Geology of Prince Edward Island, Ells (R. W.), 14.
  - Prince Edward Island, Watson (L. W.), 1.
- *Quebec.*
  - Amygdaloidal trap rock, Dresser, 3.
  - Artesian wells of Montreal, Adams (F. D.), 10.
  - Artesian wells of Montreal, Adams and Le Roy, 1.
  - Asbest in Canada, Cirkel, 1.
  - Asbestos, Cirkel, 3.
  - Bed-rock of the Gilbert River gold fields, Dresser, 14.
  - Bulletin on apatite, Ells (R. W.), 19.
  - Canadian amphiboles, Harrington (B. J.), 2.
  - Chrysoberyl from Canada, Evans (N. N.), 2.
  - Copper-bearing rocks in Quebec, Dresser, 7, 10, 12, 13.

Canada—Continued.

- *Quebec*—Continued.
  - Copper-bearing rocks of Sherbrooke district, Dresser, 15.
  - Copper ores in Nova Scotia, New Brunswick, and Quebec, Ells (R. W.), 22.
  - Crystallographic study of millerite, Palache and Wood, 1.
  - Description of map of Ottawa district, Ami, 24.
  - Eboulement à Saint-Luc-de-Vincennes, Laflamme, 2.
  - Exploration de l'Ile d'Anticosti, Combes, 1.
  - Field notes on geology of country about Chelsea, Quebec, Ami, 23.
  - Geological exploration of Anticosti, Laflamme, 3.
  - Geological formations about Montreal, Ami and Adams, 1.
  - Geology and petrography of Shefford Mountain, Dresser, 9.
  - Geology of Brome Mountain, Dresser, 11.
  - Geology of Nottaway River Basin, Bell (Robert), 5.
  - Geology of county of Ottawa, Haycock, 4.
  - Geology of county of Ottawa, Johnston (J. F. E.), 2.
  - Geology of Province of Quebec, Ells (R. W.), 8.
  - Geology of Rigaud Mountain, Le Roy, 1.
  - Geology of St. Helens Island, Nolan and Dixon, 1.
  - Geology of the Paleozoic basin, Ells (R. W.), 1.
  - Geology of the Three Rivers map sheet, Ells (R. W.), 2.
  - Geology of Yamaska Mountain, Young, 1.
  - Glaciation of Mount Orford, Chalmers, 9.
  - Gold-bearing alluvions of Quebec, Chalmers, 2.
  - Helderbergian fossils near Montreal, Schuchert, 1.
  - Hornblende lamprophyre dike at Richmond, Dresser, 2.
  - Landslide on the Lièvre River, Barlow, 9.
  - Landslide on Lièvre River, Ells (R. W.), 16.
  - Limestone of Philipsburg Railway and Coal Company, Donald, 1.
  - Magnetic iron sand of the St. Lawrence, Obalski, 1.
  - Marl deposits, Ells (R. W.), 6.
  - Mica, Cirkel, 4.
  - Mica deposits of Canada, Ells (R. W.), 21.
  - Mineral containing radium, Obalski, 2.
  - Minerals of Ottawa Valley, Willimott, 1.
  - Modifications remarquables causées à l'embouchure de la Rivière Ste.-Anne, Laflamme, 1

Canada—Continued.
Quebec—Continued.
Monographie de l'Ile d'Anticosti, Schmitt, 1.
Monteregian Hills, Adams (F. D.), 7.
Native arsenic from Montreal, Evans (N. N.), 1.
Notes on mica, Corkill, 1.
Notes on Mount Royal, Buchan, 2.
Oil fields of Gaspe, Ells (R. W.), 12.
Percé, sketch of its geology, Clarke (J. M.), 26.
Petrographical contribution to geology of Quebec, Dresser, 6.
Petrography of Belvidere Mountain deposits, Marsters, 3.
Petrography of Mount Orford, Dresser, 4.
Petrography of Shefford Mountain, Dresser, 5.
Pleistocene of Montreal and Ottawa Valley, Buchan, 3.
Pyroxenites of the Grenville series in Ottawa County, Gordon (C. H.), 5.
Rock contacts in the Kingston district, Ells (R. W.), 15.
Shore lines and landslips of St. Lawrence Valley, Chalmers, 1.
Surface geology of eastern Quebec, Chalmers, 10.
Surface geology of southern part of Quebec, Chalmers, 8.
Was Mount Royal an active volcano?, Buchan, 1.
Saskatchewan.
Explorations in Saskatchewan and Keewatin, Tyrrell, 3.
Geological explorations in Athabaska, Saskatchewan, and Keewatin, Dowling, 6.
Ungava.
Exploration of east coast of Hudson Bay, Low, 2.
Geology of Nastapokan Islands, Low, 3.
Iron-bearing rocks of Nastapokan Islands, Mickle, 1.
Yukon Territory.
Artesian well in the Klondike, Tyrrell, 2.
Bornite ores of British Columbia and Yukon Territory, Brewer, 16.
Bythotrephis from the Yukon district, Ami, 48.
Crystosphenes in northern America, Tyrrell, 3.
Duncan Creek mining district, Keele, 1.
Gites aurifères du Klondike, Bel, 2.
Gold mining in Arctic America, Penrose, 1.
Klondike district, McConnell, 4, 5, 6.
Macmillan River, Yukon district, McConnell, 3.
Scaphoceros tyrrelli, Osgood, 1.
Voyage minier au nord-ouest Canadien, Bel, 1.
White Horse copper camp, Brewer (W. M.), 15.

Canada—Continued.
Yukon Territory—Continued.
White Horse district, Brewer (W. M.), 11.
Yukon district, McConnell, 2.
Yukon gold fields, Miers, 1.
General.
Acrothyra and Hyolithes, a comparison, Matthew (G. F.), 7.
Addenda and corrigenda to progress of geological work in Canada during 1899, Ami, 5.
Advantages of combining topographical with geological surveying in unexplored regions, Bell (R.), 9.
Archæan rocks of Ottawa Valley, Osann, 2.
Artesian wells, paleontology, Ami, 22.
Asbestus, Ells (R. W.), 10.
Batrachian footprints, Matthew (G. F.), 30.
Bibliography of Canadian geology and paleontology for 1900, Ami, 19.
Bibliography of Canadian geology and paleontology, Ami, 42.
Bibliography of Canadian geology and paleontology for 1903, Ami, 44.
Blairmore-Frank coal fields, Leach (W. W.), 2.
Cambrian age of Dictyonema slates of New Canaan and Kentville, Nova Scotia, Ami, 32.
Canadian Endoceratidæ, Whiteaves, 19.
Canadian geology, Evans (H. F.), 1.
Canadian graphite, Brumell, 1.
Canadian Rockies. Part II, On some rock specimens, Bonney, 2.
Canadian species of Trocholites, Whiteaves, 13.
Canadian specimens of Lituites, Whiteaves, 10.
Chemistry and mineralogy, Hoffmann, 8.
Classification of the Archean, Coleman, 6.
Coal fields of Canada, Denis, 1.
Composition and occurrence of petroleum, Mabery, 3.
Composition of Canadian limestone, Donald, 2.
Composition of Montreal minerals, Harrington (B. J.), 5.
Contact of Archean and post-Archean, Willmott, 3.
Correction in classification of gold formation, Hille, 4.
Country east of Nipigon Lake and River, Parks, 2.
Country west of Nipigon Lake and River, Wilson (A. W. G.), 3.
Cretaceous and Tertiary plants of Canada, Penhallow, 4.
Descriptions of rocks collected in 1900, Barlow, 1.
Development in size of the inarticulate brachiopods of the basal Cambrian, Matthew (G. F.), 17.

Canada—Continued.

General—Continued.

Did the upper Etcheminian fauna invade eastern Canada from the southeast? Matthew (G. F.), 18.
Distinctive characters of the Mid-Cretaceous fauna, Osborn, 12.
Eastern part of Abitibi region, Johnston (J. F. E.), 1.
Effect of superficial débris on the advance and retreat of some Canadian glaciers, Ogilvie, 4.
Eisenerzlagerstätten am Lake Superior, Macco, 1.
Esquisse geologique du Canada, Ami, 33.
Expedition to Hudson Bay, Low, 4.
Exploration in Canadian Rockies, Wilcox, 1.
Fauna of Chazy limestone, Raymond (P. E.), 7.
First Eparchean formation, Ami, 41.
Formation of sedimentary deposits, Wilson (A. W. G.), 7.
Fossils from Mount Noyes (Canadian Rockies), Woodward (H.), 2.
Fossils from the Silurian rocks of Ekwan River, Whiteaves, 17.
Genera and species of Canadian Paleozoic corals, Lambe, 2.
Geological survey of Canada as an educational institution, Walker (T. L.), 1.
Geological record of Rocky Mountain region, Dawson, 2.
Geologie von Canada, Haas, 2.
Geologische Reiseskizzen aus Nordamerika, Felix, 1.
Geology of international boundary, Daly, 6.
Geology of principal cities in eastern Canada, Ami, 1.
Glacial lakes and Pleistocene changes in St. Lawrence Valley, Coleman, 22.
Gold production of North America Lindgren, 16.
Gold production of North America, Miller (W. G.), 10.
Huronian of Moose River Basin, Parks, 1.
Huronian question, Coleman, 10.
Isochilinæ from Canada, Jones (T. R.), 2.
Laurentian peneplain, Wilson (A. W. G.), 6.
Les plus anciennes faunes paléozoiques, Matthew (G. F.), 5.
Life and work of the late Dr. Selwyn, Ami, 38.
Lists of fossils from formations along Ottawa River, Ami, 21.
Metamorphism of the Laurentian limestones of Canada, Winchell (N. H.), 17.
Mica and the mica industry, Colles, 1.
Mica deposits, Cirkel, 2.
Mineral statistics, Ingall, 1.
Molybdenite, Wells, 2.

Canada—Continued.

General—Continued.

Molybdenum and tungsten, Johnston, 1.
New genera and species from Belly River series, Lambe, 3.
New mineral occurrences in Canada, Hoffmann, 2.
Northeastern Canada to the Arctic coast, Hanbury, 1.
Notes on molybdenite, Willimott, 2.
Notes on specimens collected in the Canadian Rocky Mountains, Bonney, 3.
Notes on the life history of coal seams, Gwillim, 5.
Oboloid shells of the Cambrian system in Canada, Matthew (G. F.), 16.
Occurrence of chrompicotite, Hoffmann, 5.
Operations of Canada Geological Survey, Bell (Robert), 4.
Osmundites skidegatensis n. sp., Penhallow, 3.
Paleozoic Cypridina from Canada, Jones (T. R.), 3.
Paleontology and chronological geology, Ami, 36.
Paleontology and zoology, Whiteaves, 5, 16, 18.
Peat in Canada, Chalmers, 7.
Petrography of Sheffield and Brome Mountains, Dresser, 8.
Physical geography of northern Appalachian system, Dresser, 1.
Physical history of Rocky Mountain region, Dawson, 3.
Physiography of the Archean areas of Canada, Wilson (A. W. G.), 10.
Progress of vertebrate paleontology in Canada, Lambe, 12.
Published writings of Elkanah Billings, Walker (B. E.), 1.
Reconnaissance surveys of Four Rivers, Wilson (W. J.), 2.
Region southeast of Lac Seul, McInnes, 1.
Report of section of chemistry and mineralogy, Hoffmann, 1, 4, 6.
Report on topography and geology of Great Bear Lake, Bell (J. M.), 1.
Revision of genera and species of Canadian Paleozoic corals, Lambe, 2.
Rock specimens from the Canadian Rocky Mountains, Bonney, 4.
Rugose corals from the Silurian rocks of Manitoba, Whiteaves, 14.
Silurian and Devonian formations of eastern Canada, Ami, 12.
Section of mines, annual report, Ingall, 2, 3, 5, 7, 9.
Seismology in Canada, Stupart, 1.
So-called basal granite of Yukon Valley, McConnell, 1.
Sodalite syenite (ditroite) from Ice River Valley, Canadian Rocky Mountains, Bonney, 1.

Canada—Continued.

- *General*—Continued.
  - Stratigraphic position of Judith River beds, Hatcher and Stanton, 1.
  - Stratigraphy of the Cascade coal basin, Dowling, 10.
  - Subdivisions of the Cambrian system, Ami, 13.
  - Submerged tributary to the pre-Glacial river of the Gulf of St. Lawrence, Poole, 7.
  - Summary report on operations of Geological Survey, Bell (Robert), 3, 4, 7, 8.
  - Summary report on the operations of the Geological Survey, Dawson, 4, 5.
  - Synopsis of geology of Canada, Ami, 2.
  - Tertiary plants, Penhallow, 5.
  - Tertiary plants from Canada and the United States, Penhallow, 6.
  - Varieties of serpentine in southeastern Quebec, Dresser, 16.
  - Vertebrate paleontology, Lambe, 13, 15.
  - West side of James Bay, Dowling, 3.
  - Western part of Abitibi region, Wilson (W. J.), 1.
  - Whittleseya and their systematic relations, White (D.), 4.
  - Work of Doctor Selwyn in Canada, Ami, 45.
  - Work of prehistoric scolytid, Hopkins (A. D.), 1.

Carboniferous.

- *Alaska.*
  - Carboniferous section in Copper River Valley, Mendenhall, 6.
  - Geological section of Rocky Mountains in northern Alaska, Schrader, 1.
  - Geology of Copper River region, Mendenhall, 8.
- ***Appalachian region.***
  - Age of the coals at Tipton, Pa., White (D.), 2.
  - Age of the Mercer group, White (D.), 13.
  - Age of the Wise and Harlan formations of southwestern Virginia, White (D.), 23.
  - Anthracite coal field west of Washington, White (D.), 12.
  - Anthracite of Third Hill Mountain, West Virginia, Griffith, 3.
  - Anticlinal folds near Meadville, Pa., Smallwood and Hopkins, 1.
  - Appalachian coal field, White (I. C.), 7.
  - Beaver folio, Pennsylvania, Woolsey, 3.
  - Bituminous coal field of Maryland, White (D.), 7.
  - Bituminous coal field of Ohio, Haseltine, 2.
  - Bituminous coal field of Pennsylvania, White and Campbell, 1.
  - Brownsville-Connellsville folio, Campbell (M. R.), 8.
  - Carboniferous of the Appalachian basin, Stevenson (J. J.), 6.
  - Charleston folio, Campbell (M. R.), 2.

Carboniferous—Continued.

- *Appalachian region*—Continued.
  - Classification of the Waverley series, Prosser, 1.
  - Clays of upper Ohio and Beaver River region, Hice, 2.
  - Coal deposits of Georgia, McCallie, 9.
  - Coal Measures of bituminous regions of Pennsylvania, Adams (T. K.), 1.
  - Coal Measures of central Pennsylvania, Fluck, 1.
  - Contributions to Devonian paleontology, Williams and Kindle, 1.
  - Correlation of Coal Measures of Maryland, Clark and Martin, 5.
  - Correlation of formations and members [of the Maryland coal district], Clark and Martin, 6.
  - Cumberland Plateau coal field, Duffield, 1.
  - Deposition of the Appalachian Pottsville, White (D.), 14, 15.
  - Distribution and character of Maryland coal beds, Clark, Martin, and Rutledge, 1.
  - Ebensburg folio, Pennsylvania, Butts, 7.
  - Elders Ridge folio, Stone (R. W.), 7.
  - Elkland-Tioga folio, Fuller and Alden, 2.
  - Erratic bowlder from the Coal Measures of Tennessee, McCallie, 5.
  - Gaines folio, Fuller and Alden, 1.
  - Gaines oil field of northern Pennsylvania, Fuller (M. L.), 3.
  - Geological excursion in Pittsburg region, Grant (U. S.), 4.
  - Geological horizon of the Kanawha black flint, White (I. C.), 4.
  - Geology of Garrett County, Martin (G. C.), 1.
  - Geology of Pittsburg district, White (I. C.), 6.
  - Geology of the Maryland coal district, Martin, 16.
  - Greenville folio, Keith, 11.
  - Gypsum deposits in Virginia, Eckel, 23.
  - Indiana folio, Richardson (G. B.), 3.
  - Kanawha and New River coal fields of West Virginia, Robinson (N.), 1.
  - Kittanning folio, Butts, 4.
  - Latrobe folio, Campbell (M. R.), 18.
  - Limestones of southwestern Pennsylvania, Clapp, 4.
  - Lower Carboniferous of Appalachian Basin, Stevenson (J. J.), 2, 4.
  - Masontown-Uniontown folio, Campbell (M. R.), 6.
  - Mauch Chunk of Pennsylvania, Stevenson (J. J.), 1.
  - Maynardville folio, Keith, 1.
  - Mineral resources of Elders Ridge quadrangle, Stone (R. W.), 8.
  - Oil and gas fields of Greene County, Stone (R. W.), 2.
  - Original southern limit of anthracite beds, Lyman, 3.
  - Paleozoic Appalachia, Willis, 1.

Carboniferous—Continued.
Appalachian region—Continued.
Paleozoic formations of Alleghany County, Prosser, 3.
Pocono rocks in the Allegheny Valley, Campbell (M. R.), 14.
Raleigh folio, Campbell (M. R.), 5.
Recent geological work in western Pennsylvania, Campbell (M. R.), 3, 7.
Recent structural work in western Pennsylvania, Butts, 2.
Rural Valley folio, Butts, 6.
Rome folio, Hayes (C. W.), 5.
Southern Appalachian coal field, Hayes (C. W.), 7.
Steinkohlengebiete von Pennsylvanien und Westvirginien, Simmersbach, 1.
Tug River coal field, Payne, 1.
Upper Paleozoic rocks of Ohio and Pennsylvania, Girty, 10.
Use of the term Bedford limestone, Prosser, 2.
Variation and equivalence of the Charleston sandstone, Campbell (M. R.), 10.
Waverley group in Ohio, Girty, 1.
Waynesburg folio, Stone (R. W.), 6.
Canada.
Bathygnathus borealis Leidy, and the Permian of Prince Edward Island, Case, 13.
Carboniferous basin in New Brunswick, Ells (R. W.), 3.
Carboniferous rocks of Chignecto Bay, Poole, 6.
Carboniferous system of New Brunswick, Bailey (L. W.), 8.
Coal fields of New Brunswick, Poole, 2.
Coal problem in New Brunswick, Poole, 3.
Coal prospects of New Brunswick, Poole, 8.
Geological history of Gaspereau Valley, Haycock, 1.
Geological nomenclature in Nova Scotia, Fletcher, 1.
Geological record of Rocky Mountain region, Dawson, 2.
Geologie von Canada, Haas, 2.
Geology of Boisdale Hills anticline, Boright, 1.
Is there coal under Prince Edward Island, Poole, 11.
Kings and Hants counties, Nova Scotia, Fletcher, 2.
Meso-Carboniferous age of the Union and Riversdale formations, Nova Scotia, Ami, 40.
New Brunswick, Bailey (L. W.), 5.
Pictou coal field, Poole, 10.
Possible occurrence of coal beneath Neo-Carboniferous, Nova Scotia, Ami, 29, 31.
Problems in New Brunswick geology, Ells (R. W.), 25.
Stigmaria structure, Poole, 1.

Carboniferous—Continued.
Canada—Continued.
Stratigraphy versus paleontology in Nova Scotia, Matthew (G. F.), 15.
Stratigraphy versus paleontology in Nova Scotia, White (D.), 7.
Synopsis of geology of Canada, Ami, 2.
Union and Riversdale formations in Novi Scotia, Ami, 30.
Great Basin region.
Bisbee folio, Ransome, 14.
Carboniferous coal in Arizona, Dumble, 9.
Clifton folio, Lindgren, 28.
Copper deposits of Clifton-Morenci district, Lindgren, 29.
Economic geology of the Bingham mining district, Emmons (S. F.), 22.
Geology and copper deposits of Bisbee, Ransome, 10.
Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
Geology and vein phenomena of Arizona, Comstock (T. B.), 1.
Geology of Arizona, Blake (W. P.), 1.
Geology of Globe copper district, Ransome, 6.
Geology of Nevada, Spurr, 6.
Globe folio, Ransome, 13.
Historical geology of Esmeralda County, Nev., Turner, 5.
Hurricane fault in southwestern Utah, Huntington and Goldthwait, 1.
Notes on geology of southeastern Arizona, Dumble, 7.
Paleozoic rocks of Great Basin region, Weeks, 9.
Stratigraphy of Uinta Mountains, Berkey, 8.
Underground waters of Salt River Valley, Lee (W. T.), 9.
Great Lakes region.
Alabaster area, Gregory (W. M.), 3.
Coal of Michigan, Lane, 14.
Gypsum and plaster industry of Michigan, Grimsley, 7.
Northern interior coal field, Lane, 15.
Origin of Michigan gypsum deposits, Grimsley, 6.
Subcarboniferous limestone exposure at Grand Rapids, Whittemore, 1.
Subsurface geology of Alcona County, Mich., Lane, 7.
Great Plains region.
Analyses of Mississippian limestone from Atchison prospect well, Porter (F. B.), 1.
Atchison diamond-drill prospect hole, Langworthy, 1.
Carboniferous rocks of Kansas section, Adams, Girty, and White, 1.
Coal Measures faunal studies, II, Beede, 6.
Edgemont folio, Darton and Smith, 1.
Fossil insects in Permian of Kansas, Sellards, 7.

Carboniferous—Continued.
Great Plains region—Continued.
Fossil plants from upper Carboniferous and Permian formations of Kansas, White (D.), 10.
Fossil plants of Onaga, Crevecœur, 1.
Geology and underground water resources of the central Great Plains, Darton, 18.
Geology of Lyon County, Smith (A. J.), 3.
Geology of the Black Hills, Jaggar, 5.
Gypsum deposits in Oklahoma, Gould, 11.
Hartville folio, Smith (W. S. T.), 1.
Invertebrate fossils from Carboniferous section of Kansas, Girty, 4.
Kansas coal mines of the Missouri Valley, Crane, 2.
Names of coals west of Mississippi River, Keyes, 19.
Newcastle folio, Darton, 14.
New fossils from Upper Carboniferous of Kansas, Beede, 4.
Oelrichs folio, Darton, 8.
Oklahoma salt plains, Gould, 303.
Red Beds of Black Hills, Richardson (G. B.), 2.
Report of State geologist of Nebraska, Barbour (E. H.), 8.
Southern extension of the Marion and Wellington formations, Gould, 6.
Stratigraphy of Kansas Permian, Beede and Sellards, 1.
Sundance folio, Darton, 26.
Variation of spiralia in Seminula argentia (Shepard) Hall, Beede, 5, 7.
Mexico.
Geologia de Chiapas y Tabasco, Böse, 7.
Mississippi Valley region.
Carboniferous faunas of Mississippi Valley in the Rocky Mountain region, Keyes, 41.
Carboniferous fishes from central western States, Eastman, 10.
Carboniferous formations of Humboldt, Iowa, Sardeson, 11.
Carboniferous formations of the Ozark uplift, Ball, 1.
Carboniferous rock system of eastern Kansas, Wooster, 1.
Coal Measure faunal studies, Beede and Rogers, 1.
Correlation of the Clarinda well section, Keyes, 9.
Correlation of the Kinderhook formations, Weller, 1.
Cottonwood Falls folio, Prosser and Beede, 1.
Crinoidal horizon in the upper Carboniferous, Keyes, 11.
Cyclus from Coal Measures, Rogers, 3.
Depositional equivalent of hiatus at base of our Coal Measures, Keyes, 18.
Depositional measure of unconformity, Keyes, 1.

Carboniferous—Continued.
Mississippi Valley region—Continued.
Devonian hiatus in continental interior, Keyes, 28.
Devonian interval in Missouri, Keyes. 26.
Eastern interior coal field, Ashley, 1.
Economic geology of the Iola quadrangle, Adams, Haworth, and Crane, 1.
Fayetteville folio, Adams and Ulrich, 1.
Fluorspar deposits of southern Illinois, Bain, 19.
Foraminiferal ooze in Coal Measures of Iowa, Udden, 9.
Formations of northern Arkansas, Ulrich, 5.
Geological age of certain gypsum deposits, Keyes, 24.
Geological formations of Iowa, Calvin, 4.
Geological section across northern Illinois, Udden (Johan A.), 1.
Geological section in southern Illinois, Nickles, 2.
Geological section, St. Louis to Shawneetown, Nickles, 1.
Geology of Benton County, Savage, 7.
Geology of clays, Beyer and Williams, 2.
Geology of Emmet, Palo Alto, and Pocahontas counties, Macbride, 4.
Geology of Henry County, Iowa, Savage, 2.
Geology of Illinois, Rolfe, 1.
Geology of Jasper County, Iowa, Williams (I. A.), 1.
Geology of Jefferson County, Iowa, Udden, 5.
Geology of Louisa County, Iowa, Udden, 2.
Geology of Miller County, Ball and Smith, 1.
Geology of Mills and Fremont counties, Iowa, Udden, 8.
Geology of Missouri, Gallaher, 1.
Geology of Moniteau County, Van Horn, 1.
Geology of Monroe County, Iowa, Beyer and Young, 1.
Geology of Marion County, Miller (B. L.), 1.
Geology of Page County, Iowa, Calvin, 1.
Geology of Pottawattamie County, Iowa, Udden, 3.
Geology of Tama County, Iowa, Savage, 3.
Geology of Wapello County, Leonard, 3.
Geology of Webster County, Iowa, Wilder, 3.
Hannibal formation in Greene County, Park and Lyman, 2.
Kansas coal mining, Crane, 1.
Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich, 8.

Carboniferous—Continued.

Mississippi Valley region—Continued.

Lithologic phases of Pennsylvanian and Permian of Kansas, Indian Territory, and Oklahoma, Adams (G. I.), 7.

Lyon County geology, Smith (A. J.), 2.

Missouri and Arkansas zinc mines, Hedburg, 1.

Names of coals west of Mississippi River, Keyes, 19.

Notes on Kansas geology, Wooster, 2.

Oil and gas fields of western interior and Gulf coast, Adams (G. I.), 2.

Oil and gas producing rocks of Ohio, Bownocker, 1.

Permian formations of Kansas, Prosser, 14.

Permische Stegocephalen und Reptilien aus Texas, Broili, 2.

Physiography and geology of the Ozark region, Adams (G. I.), 3.

Reading blue limestone, Smith (A. J.), 4.

Report of assistant State geologist, Leonard, 2.

Revised classification of Upper Paleozoic formations of Kansas, Prosser, 7.

Rocks and geological horizons of Greene County, Shepard, 6.

Schematic standard for the American Carboniferous, Keyes, 7.

Stratigraphical location of trans-Missippian coals, Keyes, 14.

Tahlequah folio, Taff, 17.

Time values of provincial Carboniferous terranes, Keyes, 8.

Water resources in Arkansas, Purdue, 9.

Western interior coal field, Bain, 3.

Zinc and lead deposits of Arkansas, Adams (G. I.), 15.

New England and New York.

Devonic and Carbonic formations of southwestern New York, Glenn, 1.

Geology of Monadnock Mountain, Perry, 2.

Olean rock section, Clarke (J. M.), 16.

Ohio Valley region.

Berea Grit oil sand in Cadiz quadrangle, Griswold, 1.

Columbia folio, Hayes and Ulrich, 1.

Contributions to Devonian paleontology, Williams and Kindle, 1.

Cumberland Plateau coal field, Duffield, 1.

Ditney folio, Fuller and Ashley, 1.

Grottes des États-Unis, Le Couppey de la Forest, 1.

Lime resources of Ohio, Orton and Peppel, 1.

Lithographic stone deposits of eastern Kentucky, Ulrich, 3.

Lower Carboniferous area in Indiana, Hopkins (T. C.), 8.

Lower Carboniferous area of southern Indiana, Ashley, 2.

Carboniferous—Continued.

Ohio Valley region—Continued.

New fossil plants from Carboniferous and Devonian, Herzer, 4.

New fossil sponge from Coal Measures, Herzer, 3.

Nomenclature of Ohio geological formations, Prosser, 10, 15.

On an unrecognized coal horizon in northeastern Ohio, Claypole, 1.

Patoka folio, Fuller and Clapp, 2.

Psaronius, Herzer, 1.

Section across southern Indiana, Newsom, 3.

Six new species, including two new genera, of fossil plants, Herzer, 2.

Sunbury shale of Ohio, Prosser, 6.

Topography and geology of Indiana, Hopkins (T. C.), 11.

Waverly formations of central Ohio, Prosser and Cumings, 1.

Pacific coast region.

Bragdon formation, Diller, 18.

Klamath Mountain section, Diller, 12.

Marine sediments of eastern Oregon, Washburne, 1.

Rocky Mountain region.

Aladdin folio, Darton and O'Harra, 1.

Carboniferous faunas of Mississippi Valley in the Rocky Mountain region, Keyes, 41.

Carboniferous formations and faunas of Colorado, Girty, 3.

Carboniferous of Sangre de Cristo Range, Colorado, Lee (W. T.), 5.

Geological reconnaissance in eastern Valencia County, New Mexico, Johnson (D. W.), 2.

Geology and ore deposits of Elkhorn mining district, Montana, Weed, 5.

Geology of Black Hills, Darton, 1.

Geology of Castle Rock region, Lee (W. T.), 2.

Geology of Needle Mountains quadrangle, Cross and Howe, 3.

Geology of Rico quadrangle, Cross (W.), 7.

Geology of southwestern Montana, Douglass, 10.

Laramie Plains Red Beds and their age, Knight (W. C.), 6.

Red Beds of Colorado, Cross and Whitman, 2.

Red Beds of southwestern Colorado, Cross and Howe, 4.

Silverton folio, Cross and Howe, 1.

Stratigraphy and structure, Lewis and Livingston ranges, Montana, Willis, 6.

Stratigraphy of Black Hills, Bighorn Mountains, and Rocky Mountain front range, Darton, 16.

Sundance folio, Darton, 26.

Southwestern region.

Age of lavas of Plateau region, Reagan, 2.

Age of Red Beds, Adams (G. I.), 1.

Carboniferous—Continued.
Southwestern region—Continued.
Age of the Red Beds, Beede, 3.
Arkansas and Indian Territory coals, Keyes, 13.
Atoka folio, Taff, 3.
Coal lands of Indian Territory, Taff, 7–11.
Coal Measure forest near Socorro, Herrick (C. L.), 3.
Colgate folio, Taff, 2.
Contact of Permian with Pennsylvanian in Oklahoma, Kirk, 1.
Depositional measure of unconformity, Keyes, 1.
Erratic bowlders in Carboniferous shale, Taff, 18.
Foraminiferal ooze, Udden, 10.
Fossils from the Red Beds, Gould, 1.
Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
Geologie und Petrographie der Apache Mountains, Osann, 1.
Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
Geology and water resources of Oklahoma, Gould, 14.
Geology of Arbuckle and Wichita Mountains, Taff, 13.
Geology of Oklahoma, Gould, 9.
Geology of Seminole, Creek, Cherokee, and Osage nations, Gould, 2.
Geology of Shafter silver-mine district, Udden (Johan A.), 11.
Geology of the Jemez-Albuquerque region, Reagan, 1.
Geology of Wichita Mountains, Gould, 13.
Gypsum deposits in New Mexico, Herrick (H. N.), 1.
Hagan coal fields, Keyes, 43.
Invertebrate paleontology of Red Beds, Beede, 8.
Lake Valley limestone, Keyes, 54.
Kansas-Oklahoma-Texas gypsum hills, Gould, 4.
Permian life of Texas, Sternberg, 2.
Permische Stegocephalen und Reptilien aus Texas, Broili, 2.
Southwestern coal field, Taff, 4.
Stratigraphic relations of Red Beds, Adams (G. I.), 11.
Stratigraphic relations of Red Beds to Carboniferous in northern Texas, Adams (G. I.), 6.
Stratigraphic sequence in trans-Pecos Texas, Richardson (G. B.), 5.
Texas petroleum, Phillips (W. B.), 1.
Tishomingo folio, Taff, 6.
Triassic system in New Mexico, Keyes, 50.
Upper Permian in western Texas, Girty, 2.

Carboniferous—Continued.
General.
Areal geology of the Bingham mining district, Keith, 13.
Bedford as a formation name, Cumings, 1.
Carboniferous cestraciont and acanthodian sharks, Eastman, 6.
Coal formation of Bay County, Cooper, 3.
Depositional measure of unconformity, Keyes, 10.
Names for the formations of the Ohio Coal Measures, Prosser, 4.
Permian elements in the Dunkard flora, White (D.), 11.
Permian question in America, Keyes, 31.
Physical characters and history of some New York formations, Grabau, 17.
Raised beaches, Pearson (H. W.), 3.
Relations of some Carboniferous faunas, Girty, 11.
Use of the term Bedford limestone, Siebenthal, 1.

Cartography.
Cartographic representation of geological formations, Keyes, 25.
Circular projection of whole earth's surface, Van der Grinton, 1.
Eastern Ohio oil fields, Griswold, 2.
Geological mine maps and sections, Brunton, 1.
Geological map of Indiana, Hopkins (T. C.), 10.
Mapping of crystalline schists. Part I, Methods, Hobbs, 10.
Preparation of a geologic map, Eckel, 8.
Relief of earth's surface, Curtis, 3.

Central America.
Gebirgbaus von Mittelamerika, Sapper, 22.

Chemical analyses.[a]
Absarokite, Pirsson, 4.
Absarokose, Pirsson, 4.
Acmite, Bøggild, 5.
Actinolite, Clarke (F. W.), 1.
Actinolite, Julien, 7.
Adamellite, Cushing, 3, 10.
Adamellite, Ransome, 6.
Adularia, Spurr, 29.
Aegire, Bøggild, 5.
Aegirite, Clarke (F. W.), 1.
Aegirite, Clarke and Steiger, 1.
Aegirite, Steiger, 2.
Aenigmatite, Bøggild, 5.
Akerite, Dresser, 9.
Albanose, Pirsson, 4.
Albite, Blasdale, 1.
Albite, Bonney, 1.
Albite, Clarke (F. W.), 1.
Albite, Emerson (B. K.), 9.

---

[a] The large number of analyses appearing in Washington's "Chemical analyses of igneous rocks, published from 1884 to 1900," in Clarke's "The analyses of rocks from the laboratory of the United States Geological Survey," in Merrill's "The nonmetallic minerals, their occurrence and uses," and in Washington's "Superior analyses of igneous rocks from Roth's Tabellen," have not been included in the list.

Chemical analyses—Continued.
Algodonite. Koenig, 2.
Alkali deposits, Knight and Slosson, 1.
Alkali-syenite, Wright (F. E.), 3.
Allanite, Bøggild, 5.
Allanite, Clarke (F. W.), 1.
Allophane, Bain, 2.
Altaite, Eakle, 1.
Alunite, Clarke (F. W.), 1.
Alunite, Hillebrand and Penfield, 1.
Alunogen, Clarke (F. W.), 1.
Alunogen, Headden, 4.
Amblygonite, Penfield, 2.
Amblygonite, Schaller, 3, 8.
Amphibole, Clarke (F. W.), 1.
Amphibole, Harrington (B. J.), 2.
Amphibole, Phalen, 1.
Amphibole, Weidman, 2.
Amphibole, Wright (F. E.), 3.
Amphibole granite, Weidman, 4.
Amphibole-peridotite, Pratt and Lewis, 1.
Amphibole schist, Julien, 7.
Amphibole syenite, Weidman, 4.
Amphibolite, Julien, 7.
Amphibolite, Marsters, 3.
Amphibolite-pyroxene rocks, Turner, 2.
Amphibolite-schist, Lindgren, 1.
Analcim, Bøggild, 5.
Analcite, Clarke (F. W.), 1.
Analcite, Clarke and Steiger, 1.
Analcite, Pirsson, 4.
Analcite, Steiger, 1, 2.
Analcite-basalt, Clarke and Steiger, 1.
Analcite-basalt, Pirsson, 4.
Analcite tinguaite, Finlay (G. I.), 8.
Anchylite, Bøggild, 5.
Andesine, Pratt and Lewis, 1.
Andesine rock, Kolderup, 4.
Andesite, Barrell, 1.
Andesite, Diller, 7, 12.
Andesite, Finlay (G. I.), 8.
Andesite, Gregory (H. E.), 1.
Andesite, Hogarty, 1.
Andesite, Lawson and Palache, 1.
Andesite, Scott (O. N.), 1.
Andesite, Spurr, 29.
Andesite, Watson (T. L.), 6.
Andesite, Weed, 5.
Andesite-granophyre, Fairbanks, 7.
Andradite, Simonds, 3.
Anhydrite, Schaller, 8.
Annite, Clarke (F. W.), 1.
Annite, Sears, 1.
Anorthite, Bøggild, 5.
Anorthite, Clarke (F. W.), 1.
Anorthite, Pratt and Lewis, 1.
Anorthoclase, Clarke (F. W.), 1.
Anorthosite, Cushing, 10.
Anthophyllite, Pratt and Lewis, 1.
Antophyllite, Bøggild, 5.
Antlerite, Clarke (F. W.), 1.
Apatite, Bøggild, 5.
Apatite, Clarke (F. W.), 1.
Apatite, Knight (N.) 4.
Apatite, Osann, 2.
Apatite, Wolff and Palache, 1.

Chemical analyses—Continued.
Aplite, Barrell, 1.
Aplite, Reid (J. A.), 1.
Aplite, Watson (T. L.), 5.
Apophyllite, Bøggild, 5.
Apophyllite, Clarke (F. W.), 1.
Apophyllite, Clarke and Steiger, 1.
Apophyllite, Schaller, 8.
Aragonite, Pratt and Lewis, 1.
Arfvedsonite, Bøggild, 5.
Arfvedsonite, Weidman, 2.
Arfedsonite, Wright (F. E.), 3.
Arkansose, Pirsson, 4.
Arkite, Washington, 1, 2.
Arsenic, Evans (N. N.), 1.
Arsenopyrite, Richardson (C. H.), 2.
Artesian water, Blatchley, 3.
Asbestos, Cirkel, 1.
Ash, Barbour (E. H.), 8.
Ash, recent, Calkins, 1.
Asphalt, Boutwell, 11.
Asphalt, Buckley, 3.
Asphalt, Harper (H. W.), 1.
Asphalt, Vaughan, 8.
Asphaltum, Simonds, 3.
Astrophyllite, Clarke (F. W.), 1.
Augite, Bøggild, 5.
Augite, Clarke (F. W.), 1.
Augite-diorite, Dresser, 5, 9.
Augite-hornblende-syenite, Daly, 7.
Augite-labradorite, Lacroix, 3.
Augite-latite, Clarke and Steiger, 1.
Augite syenite, Coleman, 8, 13.
Augite-syenite, Cross and Spencer, 1.
Augite syenite, Cushing, 3, 10.
Augite-syenite, Peck, 1.
Augite-syenite, Phalen, 2.
Augite-vosgesite, Smith (W. S. T.), 5.
Auvergnose, Phalen, 1.
Awaruite, Jamieson, 1.
Axinite, Clarke (F. W.), 1.
Axinite, Ford (W. E.), 3.
Babingtonite, Palache and Fraprie, 1.
Banatite, Cushing, 3, 10.
Barite, Rowe, 3.
Barkevikite, Pirsson, 4.
Barkevikite, Weidman, 2.
Barkevikite, Wright (F. E.), 3.
Basalt, Diller and Patton, 1.
Basalt, Finlay (G. I.), 8.
Basalt, Kroustchoff, 1.
Basalt, Lawson and Palache, 1.
Basalt, Lindgren, 21.
Basalt, Merrill, and others, 1.
Basalt, Smith (G. O.), 13.
Basalt, Spurr, 29.
Basalt, Weed, 18.
Basalt-augite, Nicolau, 1.
Basalt cinder buttes, Russell, 13.
Bastnasite, Clarke (F. W.), 1.
Bastnasite and tysonite, Allen and Comstock, 1.
Bauxite, Clarke (F. W.), 1.
Bauxite, Watson (T. L.), 2, 12.
Bentonite, Darton, 14.
Bentonite, Fisher (C. A.), 6.
Bergamaskite, Weidman, 2.

Chemical analyses—Continued.
Beryl, Clarke (F. W.), 1.
Bindheimite, Clarke (F. W.), 1.
Biotite, Böggild, 5.
Biotite, Clarke (F. W.), 1.
Biotite, Eyerman, 1.
Biotite cascadose, Pirsson, 4.
Biotite-diorite, Osmont, 1.
Biotite gneiss, Belowsky, 1.
Biotite-granite, Bascom, 3.
Biotite-granite, Daly, 7.
Biotite-granite, Spurr, 2.
Biotite-ijolite, Washington, 1.
Biotite-rhyolite, Spurr, 2.
Biotite-trachyte, Cross (W.), 6.
Bixbyite, Penfield and Foote, 1.
Bismuthinite, Clarke (F. W.), 1.
Bismuthite, Headden, 4.
Boglime, Lane, 21.
Bole, Clarke (F. W.), 1.
Boltonite, Clarke (F. W.), 1.
Boothite, Schaller, 1, 3, 8.
Bornite, Harrington (B. J.), 3.
Borolanite, Pirsson, 4.
Borolanose, Pirsson, 4.
Bostonite, Cross (W.), 6.
Bournonite, Schaller, 8.
Brine, Darton, 14, 18.
Britholite, Böggild, 5.
Britholite, Böggild and Winther, 1.
Brochantite, Clarke (F. W.), 1.
Bröggerite, Clarke (F. W.), 1.
Bronzite, Clarke (F. W.), 1.
Bronzite, Pratt and Lewis, 1.
Brucite, Clarke (F. W.), 1.
Building stone, Crosby and Loughlin, 1.
Building stone, Knight (N.), 2.
Building stone, Shedd, 2.
Bytownite rock, Kolderup, 4.
Calamine, Clarke (F. W.), 1.
Calamine, Clarke and Steiger, 1.
Calamine, Watson, 17.
Calaverite, Clarke (F. W.), 1.
Calcite, Harrington (B. J.), 4.
Calcite, Watson, 17.
Calcite strontium, Chester, 1.
Caliche, Blake (W. P.), 4.
Caliche, Lee (W. T.), 9.
Californite, Clarke and Steiger, 2.
Camptonite, Daly, 7.
Camptonite, Finlay (G. I.), 8.
Camptonite, Kemp, 32.
Camptonite, Ogilvie, 2.
Camptonose, Pirsson, 4.
Cancrinite, Clarke (F. W.), 1.
Cancrinite, Clarke and Steiger, 1.
Carnotite, Clarke (F. W.), 1.
Carnotite ore, Hillebrand and Ransome, 1.
Carphosiderite, Böggild, 5.
Celestite, Hoffman, 1.
Cement, Crider, 1.
Cement, Eckel, 5, 13, 31, 34.
Cement, Hillebrand, 3.
Cement, Lane, 21.
Cement, Smith (E. A.), 2.
Cement, Taff, 5.

Chemical analyses—Continued.
Cement rock, Peck, 5.
Cement rock, Ries, 4.
Cerussite, Warren, 1.
Chabazite, Clarke (F. W.), 1.
Chabazite, Clarke and Steiger, 1.
Chabazite, Pratt and Lewis, 1.
Chabazite, Steiger, 1, 2.
Chalcanthite, Schaller, 1.
Chalcopyrite, Winchell (A. N.), 2.
Chalcolamprite, Böggild, 5.
Chalk, Ries, 4.
Chalk, Taff, 5, 15.
Chalk marl, Taff, 5.
Chenevixite, Clarke (F. W.), 1.
Chert, Bain, 2.
Chert, Leith, 4.
Chert, Weidman, 5.
Childrenite, Penfield, 1.
Chiolite, Böggild, 5.
Chlorite, Blasdale, 1.
Chlorite, Böggild, 5.
Chloritoid, Clarke (F. W.), 1.
Chloritoid, Pratt and Lewis, 1.
Chloropal, Turner, 4.
Chordylite, Böggild, 5.
Chotose, Pirsson, 4.
Chromite, Clarke (F. W.), 1.
Chrompicotite, Hoffmann, 5, 6.
Chrysocolla, Lindgren, 29.
Chrysocolla, Lindgren and Hillebrand, 1.
Chrysocolla, Palmer (C. M.), 1.
Chrysolite, Clarke (F. W.), 1.
Chrysotile, Clarke, (F. W.), 1.
Chrysotile, Marsters, 3.
Chrysotile, Pratt and Lewis, 1
Ciminite, Pirsson, 4.
Cimolite, Clarke (F. W.), 1.
Clay, Beyer and Williams, 1, 2.
Clay, Blatchley, 8.
Clay, Buckley, 1, 3.
Clay, Crider, 1.
Clay, Eckel, 4, 5.
Clay, Eckel and Crider, 1.
Clay, Fall, 2.
Clay, Gillespie, 1.
Clay, Hopkins (T. C.), 1, 4.
Clay, Gould, 14.
Clay, Grant (U. S.), 5.
Clay, Hoffmann, 6.
Clay, Landes, 2.
Clay, Lane, 21, 34, 39.
Clay, Loughlin, 1.
Clay, Mason, 1.
Clay, Mathews, 1.
Clay, Merrill, and others, 1.
Clay, Ries, 1, 4, 5, 6, 12, 13.
Clay, Russell, 6, 23.
Clay, Smith (E. A.), 2–4, 8.
Clay, Taff, 5.
Clay, Woolsey, 1.
Clay shale, Lane, 21.
Clay shale, Lindgren, 28, 29.
Clay-slate, Lindgren, 1.
Cleveite, Clarke (F. W.), 1.
Clinochlore, Clarke (F. W.), 1.

Chemical analyses—Continued.
Clinoclasite, Clarke (F. W.), 1.
Clinohedrite, Penfield and Foote, 2.
Coal, Arnold, 5.
Coal, Ashley, 1, 3, 4, 7.
Coal, Barbour (E. H.), 8.
Coal, Beyer and Young, 1.
Coal, Brooks, 3.
Coal, Burrows, 1.
Coal, Butts, 4, 5.
Coal, Campbell (M. R.), 16, 17.
Coal, Collier, 2.
Coal, Cooper, 3.
Coal, Darton, 21.
Coal, Diller, 11, 21.
Coal, Fisher (C. A.), 5.
Coal, Fuller and Alden, 1.
Coal, Gilpin, 3.
Coal, Gwillim, 4, 5.
Coal, Hayes (C. W.), 7.
Coal, Heurteau, 1.
Coal, Hoffmann, 4, 6.
Coal, Kirsopp, 1.
Coal, Knight (W. C.), 7.
Coal, Landes and Ruddy, 1.
Coal, Lane, 15, 39, 49.
Coal, Langworthy, 1.
Coal, Martin, 15.
Coal, Richardson (G. B.), 3.
Coal, Ries, 14.
Coal, Robinson (N.), 1.
Coal, Russell, 6.
Coal, Scholz, 2.
Coal, Simonds, 3.
Coal, Smith (F. B.), 1.
Coal, Smith (G. O.), 6.
Coal, Smith (W. D.), 1.
Coal, Spencer (A. C.), 10.
Coal, Spurr, 20.
Coal, Stock, 1.
Coal, Storrs (L. S.), 1.
Coal, Taff, 4, 16.
Coal, Trumbull, 1.
Coal, Von Rosenberg, 1.
Coal, White (I. C.), 7.
Coal, White and Campbell, 1.
Coal, Wigmore, 1, 2.
Coal, Woodworth, 4.
Colemanite, Clarke (F. W.), 1.
Columbite, Böggild, 5.
Columbite, Headden, 4.
Conichalcite, Clarke (F. W.), 1.
Copiapite, Clarke (F. W.), 1.
Copper carbonate, Gallaher, 1.
Copper ore, Bond, 1.
Copper ore, Lindgren, 29.
Copper ore, Weed, 18.
Copper pitch ore, Lindgren, 29.
Copper pitch ore, Lindgren and Hillebrand, 1.
Coquimbite, Eakle, 1.
Cordierite, Böggild, 5.
Cordierite-hornfels, Daly, 7.
Cordierite-hornstone, Leith, 4.
Coronadite, Lindgren, 29.
Coronadite, Lindgren and Hillebrand, 1.
Corundum, Pratt and Lewis, 1.

Chemical analyses—Continued.
Cosalite, Clarke (F. W.), 1.
Covellite, Clarke (F. W.), 1.
Covite, Pirsson, 4.
Covite, Washington, 1, 2.
Cryolite, Böggild, 5.
Cryolite, Clarke (F. W.), 1.
Cryophyllite, Clarke (F. W.), 1.
Cryophyllite, Sears, 1.
Cryptoperthite, Dresser, 11.
Cummingtonite, Böggild, 5.
Cuprobismutite, Clarke (F. W.), 1.
Cuprodescloizite, Clarke (F. W.), 1.
Cuprodescloizite, Headden, 1.
Custerose, Phalen, 1.
Cymatolite, Brush and Dana, 4.
Cyrtolite, Clarke F. W.), 1.
Dacite, Bergeat, 3.
Dacite, Diller, 12.
Dacite, Lacroix, 3.
Dacite, Lindgren and Drake, 2.
Dacite, Ransome, 6.
Dacite, Spurr, 20.
Dacite-granophyre, Fairbanks, 7.
Danburite, Clarke (F. W.), 1.
Datolite, Clarke (F. W.), 1.
Datolite, Clarke and Steiger, 1.
Datolite, Eakle, 1.
Datolite, Hoffmann, 3, 4.
Dellenose, Phalen, 1.
Descloizite, Clarke (F. W.), 1.
Deweylite, Chester, 1.
Deweylite, Pratt and Lewis, 1.
Diabase, Bascom, 1, 3.
Diabase, Cushing, 10.
Diabase, Daly, 7.
Diabase, Emerson (B. K.), 3, 9.
Diabase, Fairbanks, 7.
Diabase, Haehl and Arnold, 1.
Diabase, Lindgren, 1.
Diabase, Ransome, 6.
Diabase, Weed, 18.
Diabase greenstone, Julien, 7.
Diallage, Clarke (F. W.), 1.
Diaspore, Clarke (F. W.), 1.
Dickinsonite, Brush and Dana, 1.
Dike-rock (acid), Bascom, 1.
Diopside, Blasdale, 1.
Diopside, Clarke (F. W.), 1.
Diopside, Pirsson, 4.
Diorite, Cross and Spencer, 1.
Diorite, Daly, 7.
Diorite, Finlay (G. I.), 8.
Diorite, Jaggar and Palache, 1.
Diorite, Leonard, 1.
Diorite, Lindgren, 21.
Diorite, Phalen, 1.
Diorite, Reid (J. A.), 1.
Diorite, Spencer (A. C.), 10.
Diorite-porphyry, Cross and Spencer, 1.
Diorite-porphyry, Kemp, 32.
Diorite-porphyry, Lindgren, 20.
Dolerite, Kay, 1.
Dolomite, Bayley, 1.
Dolomite, Böggild, 5.
Dolomite, Clarke (F. W.), 1.
Dolomite, Dale, 1.

Chemical analyses—Continued.
- Dolomite, Hoffmann, 6.
- Dolomite, Knight (N.), 1, 5, 6.
- Dolomite, Lindgren, 28, 29.
- Dolomite, Newland, 1.
- Domeykite, Koenig, 2.
- Doughtyite, Headden, 4.
- Dudleyite, Pratt and Lewis, 1.
- Dumortierite, Clarke (F. W.), 1.
- Dumortierite, Ford (W. E.), 1.
- Dumortierite, Schaller, 5, 7.
- Dunite, Pratt and Lewis, 1.
- Edenite, Hoffmann, 6.
- Edenite, Pratt and Lewis, 1.
- Eglestonite, Moses, 2, 4.
- Elæolite, Clarke (F. W.), 1.
- Elæolite, Clarke and Steiger, 1.
- Elæolite-syenite, Finlay (G. I.), 8.
- Elæolite-syenite, Wolff, 1.
- Elæolite, Steiger, 2.
- Elpasolite, Clarke (F. W.), 1.
- Elpidite, Böggild, 5.
- Embolite, Clarke (F. W.), 1.
- Emmonsite, Clarke (F. W.), 1.
- Emmonsite, Hillebrand, 4, 6.
- Enargite, Clarke (F. W.), 1.
- Enargite, Headden, 4.
- Endeiolite, Böggild, 5.
- Enstatite, Böggild, 5.
- Enstatite, Clarke (F. W.), 1.
- Enstatite, Pratt and Lewis, 1.
- Enstatite-gabbro, Osann, 2.
- Enstatolite, Pratt and Lewis, 1.
- Eosophorite, Brush and Dana, 1, 3.
- Epidote, Böggild, 5.
- Epidote, Clarke (F. W.), 1.
- Epistolite, Böggild, 5.
- Epistolite, Böggild and Winther, 1.
- Epsomite, Böggild, 5.
- Epsomite, Schaller, 1.
- Erikite, Böggild, 2, 5.
- Erinite, Clarke (F. W.), 1.
- Esmeraldaite, Eakle, 1.
- Essexite, Adams (F. D.), 7.
- Essexite, Daly, 7.
- Essexite, Dresser, 5, 9, 11.
- Essexite, Washington, 1.
- Eudialyte, Böggild, 5.
- Euxenite, Böggild, 5.
- Fairfieldite, Brush and Dana, 2.
- Faujasite, Hoffmann, 6.
- Fayalite, Sears, 1.
- Fayalite, Weidman, 4.
- Feldspar, Bascom, 1.
- Feldspar, Clarke (F. W.), 1.
- Feldspar, Gallaher, 1.
- Feldspar, Hopkins (T. C.), 1.
- Feldspar, Miller (W. G.), 6.
- Feldspar, Sears, 1.
- Felsite, Hoffmann, 6.
- Fergusonite, Böggild, 5.
- Fergusonite, Simonds, 3.
- Fergusose, Pirsson, 4.
- Fibroferrite, Headden, 4.
- Fillowite, Brush and Dana, 2.
- Fire clay, Darton, 18.
- Fire clay, Gallaher, 1.

Chemical analyses—Continued.
- Flint, Gallaher, 1.
- Foyaite, Cross (W.), 6.
- Foyaite, Washington, 1, 2.
- Freieslebenite, Clarke (F. W.), 1.
- Fuchsite, Clarke (F. W.), 1.
- Fuller's earth, Cook, 1.
- Fuller's earth, Vaughan, 18.
- Gabbro, Barrell, 1.
- Gabbro, Bascom, 3.
- Gabbro, Bayley, 1.
- Gabbro, Clements, 3.
- Gabbro, Cushing, 3, 10.
- Gabbro, Daly, 11.
- Gabbro, Julien, 7.
- Gabbro, Lawson (A. C.), 10.
- Gabbro, Smith (G. O.), 13.
- Gabbro, Weed, 5.
- Gabbro diorite, Julien, 7.
- Gabbro, orbicular, Kessler and Hamilton, 1.
- Gabbro-porphyry, Johnson (D. W.), 6.
- Gadolinite, Clarke (F. W.), 1.
- Gadolinite, Simonds, 3.
- Gahnite, Clarke (F. W.), 1.
- Gahnite, Pratt and Lewis, 1.
- Galenite, Gallaher, 1.
- Ganomalite, Penfield and Warren, [illegible].
- Garnet, Clarke (F. W.), 1.
- Garnet, Clarke and Steiger, 2.
- Garnet, Eyerman, 1.
- Garnet, Lindgren, 29.
- Garnet, Villarello, 2.
- Gas, volcanic, Moissan, 2.
- Gauteite, Pirsson, 4.
- Gearksutite, Böggild, 5.
- Gearksutite, Clarke (F. W.), 1.
- Gedrite, Böggild, 5.
- Genthite, Clarke (F. W.), 1.
- Gieseckite, Böggild, 5.
- Glaucochroite, Penfield and Warren, 1.
- Glaucodot, Schaller, 8.
- Glauconite, Clarke (F. W.), 1, 3.
- Glauconite, Leith, 4.
- Glaucophane schist, Julien, 7.
- Glaucophane schists, Washington, 4.
- Glaucophane-sölvsbergite, Cross (W.), 6.
- Gneiss, Bascom, 3.
- Gneiss, Cushing, 10.
- Gneiss, Lindgren, 1.
- Gneiss, Phalen, 1.
- Gneiss, Watson (T. L.), 1, 8.
- Gold, Clarke (F. W.), 1.
- Gold ores, Chatard and Whitehead, 1.
- Grahamite, Simonds, 3.
- Graniphyro-liparose-alaskose, Iddings 3.
- Granat, Böggild, 5.
- Granite, Barrell, 1.
- Granite, Bascom, 1, 3.
- Granite, Brock, 3.
- Granite, Clements, 3.
- Granite, Cross and others, 1.
- Granite, Cushing, 10.
- Granite, Daly, 11.
- Granite, Eckel, 6.

Chemical analyses—Continued.
Granite, Finlay (G. I.), 3.
Granite, Hawes, 2.
Granite, Henry, 1.
Granite, Jaggar and Palache, 1.
Granite, Leonard, 1.
Granite, Lindgren, 1, 4.
Granite, Mathews, 1.
Granite, Perry, 1.
Granite, Phalen, 1.
Granite, Pratt, 8.
Granite, Ransome, 11, 14.
Granite, Shedd, 2.
Granite, Spurr, 2.
Granite, Villarello, 7.
Granite, Watson (T. L.), 1, 3, 4, 8, 9.
Granite, Weidman, 4.
Granite, Williams (I. A.), 2.
Granite-gneiss, Bascom, 1.
Granite-porphyry, Bayley, 1.
Granite-porphyry, Clements, 3.
Granite-porphyry, Ransome, 6, 11, 14.
Granitite, Bayley, 1.
Granitite, Clarke and Steiger, 1.
Granitite, Daly, 7.
Granitite, Ransome, 6.
Grano-borolanose, Pirsson, 4.
Granodiorite, Arnold and Strong, 1.
Granodiorite, Daly, 7.
Granodiorite, Lindgren, 1, 4, 21.
Granodiorite, Ransome, 6.
Granodiorite, Smith (G. O.), 13.
Granulite, Barrell, 1.
Greenalite, Clarke (F. W.), 3.
Greenalite rock, Leith, 4.
Greenstone, Bayley, 1.
Greenstone, Silver, 1.
Greenstone, Watson (T. L.), 6.
Grorudite, Daly, 7.
Grossularite, Clarke (F. W.), 1.
Grossularite, Hoffmann, 4.
Guitermanite, Clarke (F. W.), 1.
Gypsum, Boutwell, 3.
Gypsum, Brady, 1.
Gypsum, Clarke (F. W.), 1.
Gypsum, Darton, 14, 18.
Gypsum, Gould, 14.
Gypsum, Ransome, 3.
Gypsum, Richardson (G. B.), 2.
Gypsum, Wilder, 4.
Gypsum rock, Eckel, 19.
Gyrolite, Clarke (F. W.), 1.
Gyrolite, Schaller, 8.
Hagemannite, Böggild, 5.
Halite, Clarke (F. W.), 1.
Hallite, Clarke (F. W.), 1.
Halloysite, Clarke (F. W.), 1.
Halloysite, Ransome, 3.
Halloysite, Schaller, 3, 8.
Halotrichite, Clarke (F. W.), 1.
Hamlinite, Penfield, 5.
Hancockite, Penfield and Warren, 1.
Hanksite, Pratt, 3.
Hastingsite, Weidman, 2.
Hastingsite, Wright (F. E.), 3.
Hedenbergite-quartz syenite, Weidman, 4.

Chemical analyses—Continued.
Hedrumite, Cross (W.), 6.
Heller dacite, Nevada, Spurr, 29.
Hematite, Gallaher, 1.
Hematite, Hoffmann, 4.
Hematite, Weatherbe, 1.
Heronite, Clarke and Steiger, 1.
Hessite, Clarke (F. W.), 1.
Hessose, Dresser, 11.
Hessose (amphibole gabbro), Cross and others, 1.
Heulandite, Clarke (F. W.), 1.
Heulandite, Clarke and Steiger, 1.
Highwoodose, Pirsson, 4.
Hisingerite, Böggild, 5.
Holyokeite, Emerson (B. K.), 3, 9.
Hornblende, Adams (F. D.), 7.
Hornblende, Blasdale, 1.
Hornblende, Böggild, 5.
Hornblende, Clarke (F. W.), 1.
Hornblende, Hitchcock (C. H.), 10.
Hornblende, Pratt and Lewis, 1.
Hornblende andesite, Russell, 13.
Hornblende-andesite, Watson (T. L.), 6.
Hornblende-andesite-porphyry, Barrell, 1.
Hornblende-biotite-granite, Bascom, 3.
Hornblende-biotite-quartz-diorite, Spurr, 2.
Hornblende-gabbro, Bascom, 1.
Hornblende gabbro, Reid (J. A.), 1.
Hornblende-gneiss, Belowsky, 1.
Hornblende-granite, Bascom, 1.
Hornblende-mica-andesite, Bergeat, 3.
Hornblende-palsanite, Daly, 7.
Hornblende-quartz-andesite, Spurr, 2.
Hornblende schist, Julien, 7.
Hornblende-sölvsbergite, Cross (W.), 6.
Hornblende-syenite, Le Roy, 1.
Hornblende-syenite, Phalen, 2.
Hornblendite, Arnold and Strong, 1.
Hornblendite, Julien, 7.
Hornblendite, Turner, 2.
Hornstone, Emerson (B. K.), 8.
Hübnerite, Clarke (F. W.), 1.
Hübnerite, Hoffmann, 1.
Hübnerite, Hobbs, 28.
Hudsonite, Weidman, 2.
Hullit, Nicolau, 1.
Hussakite, Kraus and Reitinger, 1.
Hydraulic cement, Taff, 5.
Hydraulic lime, Taff, 5.
Hydromagnesite, Newland, 1.
Hydromagnesite, Hoffmann, 1.
Hydronephelite, Clarke (F. W.), 1.
Hydronephelite, Barlow, 4.
Hydronephelite, Hoffmann, 4.
Hypersthene, Böggild, 5.
Hypersthene, Clarke (F. W.), 1.
Hypersthene-akerite, Phalen, 2.
Hypersthene-andesite, Calkins, 1.
Hypersthene-andesite, Diller and Steiger, 1.
Hypersthene-andesite, Lacroix, 2, 3.
Hypersthene-andesite, Phalen, 2.
Hypersthene-andesite, Russell, 13.
Hypersthene-labradorite, Lacroix, 3.

Chemical analyses—Continued.
- Iiwaarite, Barlow, 4.
- Ijolite, Barlow, 4.
- Ijolite, Washington, 1, 2.
- Ilmenite, Clarke (F. W.), 1.
- Ilmenite, Pratt and Lewis, 1.
- Ilvaite, Bøggild, 1, 5.
- Ilvaite, Clarke (F. W.), 1.
- Ilvaite, Clarke and Steiger, 1.
- Iloite, Bøggild, 5.
- Iron ore, Bayley, 1.
- Iron ore, Beyer, 1.
- Iron ore, Boutwell, 5.
- Iron ore, Bøggild, 5.
- Iron ore, Clements, 3.
- Iron ore, Coleman, 12.
- Iron ore, Courtis, 1.
- Iron ore, Darton, 18.
- Iron ore, Diller, 20.
- Iron ore, Eckel, 33.
- Iron ore, Farrington, 13.
- Iron ore, Fuller and Alden, 2.
- Iron ore, Gallaher, 1.
- Iron ore, Hoffmann, 1, 6.
- Iron ore, Leith, 4, 11.
- Iron ore, McCaskey, 1.
- Iron ore, Mickle, 1.
- Iron ore, Obalski, 1.
- Iron ore, Richardson (C. H.), 2.
- Iron ore, Shedd, 1.
- Iron ore, Warwick, 1.
- Iron ore, Watson (T. L.), 9.
- Iron ore, Weidman, 5.
- Itacolumite, Bascom, 3.
- Jacupirangite, Washington, 1, 2.
- Jade, Clarke (F. W.), 1.
- Jadeite, Clarke (F. W.), 1.
- Janeirose, Pirsson, 4.
- Janeirose (pseudo-leucite-sodalite-tinguaite), Cross and others, 1.
- Jarosite, Clarke (F. W.), 1.
- Jarosite, Hillebrand and Penfield, 1.
- Jarosite, Ransome, 3.
- Jefferisite, Clarke (F. W.), 1.
- Jefferisite, Pratt and Lewis, 1.
- Jeffersonite, Clarke (F. W.), 1.
- Josephinite, Clarke (F. W.), 1.
- Judithose, Pirsson, 4.
- Kaolin, Gallaher, 1.
- Kaolin, Hopkins (T. C.), 1.
- Kaolin, Mathews, 1.
- Kaolinite, Clarke (F. W.), 1.
- Katapleite, Bøggild, 5.
- Kentallenose, Pirsson, 4.
- Keratophyr, Emerson (B. K.), 9.
- Keratophyre, Sears, 1.
- Kerrite, Clarke (F. W.), 1.
- Kerrite, Pratt and Lewis, 1.
- Keweenawite, Koenig, 1.
- Knoxvillite, Clarke (F. W.), 1.
- Kornerupine, Bøggild, 5.
- Kotschubeite, Clarke (F. W.), 1.
- Krokydolith, Wright (F. E.), 3.
- Kryptoperthite, Dresser, 5.
- Kunzite, Davis (R. O. E.), 1.
- Kyanite, Clarke (F. W.), 1.
- Kyanite, Schaller, 7.
- Labradorite, Pratt and Lewis, 1.
- Labradorite rock, Dana, 1.
- Labradorite rock, Kolderup, 4.
- Lamarose, Pirsson, 4.
- Laumontite, Clarke (F. W.), 1.
- Laumontite, Clarke and Steiger, 1.
- Laurdalose, Dresser, 11.
- Laurdalose (laudalite), Cross and others, 1.
- Laurdalose, Pirsson, 4.
- Laurvikose, Dresser, 11.
- Lava, Mendenhall, 8.
- Lava, Russell, 5.
- Lawsonite, Clarke (F. W.), 1.
- Lawsonite, Schaller and Hillebrand, 1, 2.
- Lazulite, Pratt and Lewis, 1.
- Ledouxite, Richards (J. W.), 1.
- Lennilite, Clarke (F. W.), 1.
- Lepidolite, Clarke (F. W.), 1.
- Lepidolite, Hoffmann, 2, 4.
- Lepidomelane, Clarke (F. W.), 1.
- Lestivarite, Daly, 7.
- Lestiwarite, Cross (W.), 6.
- Leuchtenbergite, Clarke (F. W.), 1.
- Leuchtenbergite, Clarke and Steiger, 1.
- Leucite, Clarke (F. W.), 1.
- Leucite, Clarke and Steiger, 1.
- Leucite, Steiger, 2.
- Leucite-shonkinose, Pirsson, 4.
- Leucite-tinguaite, Wolff, 1.
- Leucitite, Clarke and Steiger, 1.
- Leucosphenite, Bøggild, 5.
- Leucophoenicite, Penfield and Warren, 1.
- Levynite, Clarke (F. W.), 1.
- Libethenite, Lindgren and Hillebrand, 1.
- Lignite, Burchard, 1, 2.
- Lignite, Crider, 1.
- Lignite, Eckel and Crider, 1.
- Lignite, Hoffmann, 4, 6.
- Lignite, Mendenhall, 8.
- Lignite, Simonds, 3.
- Lignite, Smith (G. O.), 6.
- Limburgite, Johnson (D. W.), 7.
- Limestone, Alden, 2.
- Limestone, Ashley, 2.
- Limestone, Bain, 19.
- Limestone, Bascom, 3.
- Limestone, Bassler, 2.
- Limestone, Bayley, 1.
- Limestone, Blatchley, 7.
- Limestone, Buckley, 3.
- Limestone, Catlett, 3.
- Limestone, Clapp, 4.
- Limestone, Crider, 1.
- Limestone, Darton, 8, 18.
- Limestone, Dickson, 2.
- Limestone, Donald, 1, 2.
- Limestone, Duryee, 1.
- Limestone, Eckel, 4–6, 25, 34, 39.
- Limestone, Eckel and Bain, 1.
- Limestone, Eckel and Crider, 1.
- Limestone, Emerson (B. K.), 8.
- Limestone, Gallaher, 1.
- Limestone, Gillespie, 1.

Chemical analyses—Continued.
Limestone, Gilpin, 2.
Limestone, Haworth and Schrader, 1.
Limestone, Hoffmann, 1, 4, 6.
Limestone, Hulst, 1.
Limestone, Ihlseng, 1.
Limestone, Knight (N.), 7.
Limestone, Kümmel, 1.
Limestone, Landes, 2.
Limestone, Lane, 9, 41, 49.
Limestone, Leith, 11.
Limestone, Lindgren, 28, 29.
Limestone, Miller (W. G.), 9.
Limestone, Newsom, 3.
Limestone, Nichols (H. W.), 1.
Limestone, Orton and Peppel, 1.
Limestone, Porter (F. B.), 1.
Limestone, Ransome, 3, 11.
Limestone, Ries, 4.
Limestone, Russell, 6.
Limestone, Siebenthal, 2.
Limestone, Smith (A. J.), 4.
Limestone, Smith (E. A.), 2–4, 8.
Limestone, Watson (T. L.), 17.
Limonite, Gallaher, 1.
Limonite, Hoffmann, 4.
Limonite, Newland, 1.
Limonite, Simonds, 3.
Liparose, Pirsson, 4.
Litchfieldite, Cross (W.), 6.
Lithiophilite, Brush and Dana, 1, 3.
Lithographic limestone, Hoen, 1.
Loess, Fuller and Clapp, 1.
Loess, Gallaher, 1.
Loess, Knight (N.), 3.
Löllingite, Clarke (F. W.), 1.
Lorenzenite, Böggild, 5.
Lucasite, Clarke (F. W.), 1.
Lucasite, Pratt and Lewis, 1.
Ludwigite, Clarke (F. W.), 1.
Mackintoshite, Clarke (F. W.), 1.
Mackintoshite, Simonds, 3.
Maconite, Pratt and Lewis, 1.
Madupite, Clarke and Steiger, 1.
Magnesite, Hoffmann, 6.
Magnesite, Newland, 1.
Magnetite, Clarke (F. W.), 1.
Magnetite, Hoffmann, 6.
Magnetite, Kemp, 31.
Magnetite, Leith, 4.
Magnetite, Simonds, 3.
Manganese ore, Gallaher, 1.
Manganese ore, Watson (T. L.), 9.
Manganese ore, Williams (E. G.), 1.
Marble, Eckel, 34.
Marble, Perkins, 1.
Marble, Pratt, 8.
Marble, Richardson (C. H.), 1, 2.
Marble, Shedd, 2.
Marble, Smith (E. A.), 4, 8.
Marble, Ulrich, 7.
Marcasite, Stokes, 1.
Margarite, Clarke (F. W.), 1.
Margarite, Pratt and Lewis, 1.
Mariposite, Clarke (F. W.), 1.
Marl, Blatchley and Ashley, 1.
Marl, Buckley, 3.

Chemical analyses—Continued.
Marl, Davis (C. A.), 1, 2.
Marl, Eckel, 4, 5, 34, 39.
Marl, Fall, 2.
Marl, Gillespie, 1.
Marl (bog lime), Hale, 1.
Marl, Hoffmann, 6
Marl, Kümmel, 1.
Marl, Lane, 21.
Marl, Russell, 6.
Marl, Taff, 15.
Marls, Ries, 4
Melonite, Pratt and Lewis, 1.
Melanochalcite, Koenig, 2.
Melanochalcite, Lindgren, 29.
Melanochalcite, Lindgren and Hillebrand, 1.
Melanterite, Schaller, 1.
Melonite, Clarke (F. W.), 1.
Mesolite, Clarke (F. W.), 1.
Mesolite, Steiger, 2.
Meta-andesite, Watson (T. L.), 6.
Metacinnebarite, Clarke (F. W.), 1.
Meta-gabbro, Bascom, 3.
Metarhyolite, Diller, 13.
Meteoric iron, Pratt, 1.
Meteoric iron, Simonds, 3.
Meteorite, Borgström, 1.
Meteorite, Brezina and Cohen, 1.
Meteorite, Campbell and Howe, 1.
Meteorite, Cohen, 1–3, 5, 8.
Meteorite, Farrington, 6, 16.
Meteorite, Hobbs, 15.
Meteorite, Merrill (G. P.), 2.
Meteorite, Merrill and Stokes, 1.
Meteorite, Moissan, 3.
Meteorite, Preston (H. L.), 1, 3.
Meteorite, Tassin, 3–5.
Meteorite, Ward (H. A.), 1, 7, 10.
Miaskose, Pirsson, 4.
Mica-andesite, Blake, 1.
Mica-gabbro, Barrell, 1.
Mica-gneiss, Bascom, 1, 3.
Mica-hypersthene-gabbro, Osann, 2.
Mica-schist, Bascom, 3.
Microcline, Böggild, 5.
Microcline, Clarke (F. W.), 1.
Microlite, Böggild, 5.
Micromonzonite, Pirsson, 4.
Millerite, Pn ache and Wood, 1.
Mineral water, Gallaher, 1.
Mineral water, Lindgren, 4.
Mineral water, Richardson (G. B.), 2.
Mineral waters, Hoffmann, 4.
Mineral waters, Lee (H. A.), 1.
Mineral waters, Peter, 1.
Mineral waters, Reagan, 1.
Mineral wool, Eckel, 17.
Minette, Pirsson, 4.
Missourite, Clarke and Steiger, 1.
Missourite, Washington, 1.
Missourote, Pirsson, 4.
Mitchellite, Pratt and Lewis, 1.
Mixite, Clarke (F. W.), 1.
Mizzonite, Clarke (F. W.), 1.
Mohawkite, Koenig, 2.
Mohawkite, Richards (J. W.), 1.

Chemical analyses—Continued.
Molybdenite, Wells, 2.
Monchiquose, Pirsson, 4.
Monmouthite, Adams (F. D.), 8.
Montanose, Pirsson, 4.
Montroydite, Moses, 2, 4.
Monzonite, Cross and Spencer, 1.
Monzonite, Cushing, 3, 10.
Monzonite, Daly, 7.
Monzonite, Pirsson, 1, 4.
Monzonite, Ransome, 6.
Monzonite-porphyry, Jaggar and Palache, 1.
Monzonose, Pirsson, 4.
Mordenite, Pirsson, 2.
Morencite, Lindgren, 29.
Morencite, Lindgren and Hillebrand, 1.
Muscovite, Clarke (F. W.), 1.
Nasonite, Penfield and Warren, 1.
Natrojarosite, Clarke (F. W.), 1.
Natrojarosite, Hillebrand and Penfield, 1.
Natrolite, Böggild, 5.
Natrolite, Clarke (F. W.), 1.
Natrolite, Clarke and Steiger, 1.
Natrolite, Eyerman, 1.
Natrolite, Steiger, 2.
Natron, Hoffman, 1.
Natural gas, Bownocker, 4.
Natural gas, Haworth and McFarland, 1.
Natural gas, McFarland, 1.
Natural gas, Richardson (G. B.), 6.
Nepheline, Böggild, 5.
Nepheline, Bonney, 1.
Nepheline-pyroxene-malignite, Osann, 2.
Nepheline syenite, Adams (F. D.), 8.
Nepheline syenite, Weidman, 4.
Nephelite, Clarke (F. W.), 1.
Nephelite syenite, Finlay (G. I.), 8.
Nephelite-syenite, Kemp, 32.
Nephrite, Clarke (F. W.), 1.
Neptunite, Böggild, 5.
Nickel ore, Ledoux, 1.
Niter, Clarke (F. W.), 1.
Nivenite, Clarke (F. W.), 1.
Nordmarkite, Adams (F. D.), 7.
Nordmarkite, Cross (W.), 6.
Nordmarkite, Dresser, 5, 9.
Nordmarkite, Daly, 7.
Nordmarkose, Dresser, 11.
Nordmarkose (litchfieldite), Cross and others, 1.
Norite, Bascom, 1, 3.
Norite, Cushing, 10.
Norite, Leonard, 1.
Norite, Spencer (A. C.), 10.
Northupite, Pratt, 3.
Ocher, Watson (T. L.), 10.
Ochre, Coleman and Willmott, 2.
Oil, Hill (R. T.), 5.
Oil, Knight (W. C.), 5.
Oil, Knight and Slosson, 2.
Oil, Mabery and Hudson, 1.
Okenite, Böggild, 5.
Oligoclase, Clarke (F. W.), 1.
Oligoclase, Pratt and Lewis, 1.
Oligoclase rock, Kolderup, 4.

Chemical analyses—Continued.
Olivenite, Clarke (F. W.), 1.
Olivinite, Whitaker, 1.
Olivine, Böggild, 5.
Olivine, Clarke (F. W.), 1.
Olivine, Richardson (C. H.), 2.
Olivin diabase, Cushing, 3.
Olivine diabase, Daly, 11.
Olivine-hyperite, Osann, 2.
Omeose, Phalen, 1.
Oolitic stone, Blatchley, 1.
Orendite, Clarke and Steiger, 1.
Orendose, Pirsson, 4.
Orthoclase, Clarke (F. W.), 1.
Orthoclase, Eyerman, 1.
Pachnolite, Böggild, 5.
Pachnolite, Clarke (F. W.), 1.
Paint rock, Leith, 4.
Painterite, Clarke (F. W.), 1.
Palacheite, Eakle, 4.
Palagonite, Emerson (B. K.), 9.
Palagonite tuff, Julien, 7.
Palladium ore, Headden, 4.
Paragonite, Böggild, 5.
Pearceite, Penfield, 4.
Peat, Lane, 49.
Peat, Ries, 7.
Pectolite, Böggild, 5.
Pectolite, Clarke (F. W.), 1.
Pectolite, Eakle, 1.
Pectolite, Steiger, 2.
Pegmatite, Reid (J. A.), 1.
Peridotite, Kemp, 11.
Peridotite, Lawson (A. C.), 8.
Peridotite, Matson, 2.
Peridotite, Phalen, 1.
Perknite, Turner, 2.
Petalite, Clarke (F. W.), 1.
Petroleum, Hill (R. T.), 9.
Petroleum, Heurteau, 2.
Petroleum, Knight and Slosson, 4.
Petroleum, Mabery, 1, 2.
Petroleum, Peter, 1.
Petroleum, Prutzman, 1.
Petroleum, Richardson (G. B.), 7.
Petroleum, Richardson and Wallace, 1.
Petroleum, Simonds, 3.
Petroleum, Thiele, 1.
Petzite, Clarke (F. W.), 1.
Phlegrose, Pirsson, 4.
Phlogopite, Clarke (F. W.), 1.
Phlogopite, Clarke and Steiger, 1.
Phlogopite, Osann, 2.
Phonolite, Clarke and Steiger, 1.
Phonolite, Cross (W.), 6.
Phonolite, Pirsson, 4.
Phonolite, Russell, 13.
Phonolite, Smith (W. S. T.), 5.
Phosphate, Chazal, 1.
Phosphate rock, Branner and Newsom, 1.
Phosphate rock, Ruhm, 1.
Phosphatic limestone, Peter, 1.
Phyllite, Richardson (C. H.), 2.
Phyro-biotite-cascadose, Pirsson, 4.
Pickeringite, Böggild, 5.
Picrallumogene, Clarke (F. W.), 1.

Chemical analyses—Continued.
Picrolite, Clarke (F. W.), 1.
Picrolite, Pratt and Lewis, 1.
Picrotitanite, Whitaker, 1.
Piedmontite, Clarke (F. W.), 1.
Pirssonite, Pratt, 3.
Pisanite, Clarke (F. W.), 1.
Pisanite, Schaller, 1, 3, 8.
Plagioclase basalt, Johnson (D. W.), 6.
Plaster, Parsons, 1.
Pleonaste, Clarke (F. W.), 1.
Plumasite, Lawson (A. C.), 8.
Plumbojarosite, Clarke (F. W.), 1.
Plumbojarosite, Hillebrand and Penfield, 1.
Pollucite, Clarke and Steiger, 1.
Pollucite, Wells, 2.
Polydymite, Clarke (F. W.), 1.
Porphyry, Cushing, 10.
Porphyry, Gallaher, 1.
Porphyry, Lindgren, 29.
Portland cement, Bain, 15.
Portland cement, Eckel, 4, 17, 25, 34.
Portland cement, Fall, 1.
Portland cement, Meade, 1.
Portland cement, Russell, 6.
Portland cement, Taff, 5.
Powellite, Clarke (F. W.), 1.
Prehnite, Clarke (F. W.), 1.
Prehnite, Clarke and Steiger, 1.
Prehnite, Eyerman, 1.
Prehnite, Schaller, 8.
Prochlorite, Clarke (F. W.), 1.
Prochlorite, Eyerman, 1.
Prochlorite, Pratt and Lewis, 1.
Prosopite, Clarke (F. W.), 1.
Protovermiculite, Clarke (F. W.), 1.
Pseudo-diorite, Julien, 7.
Pseudo-serpentine, Clarke (F. W.), 5.
Psilomelane, Clarke (F. W.), 1.
Ptilolite, Clarke (F. W.), 1.
Pulaskite, Adams (F. D.), 7.
Pulaskite, Brock, 3.
Pulaskite, Cross (W.), 6.
Pulaskite, Daly, 7.
Pulaskite, Dresser, 9, 11.
Pulaskite, Washington, 1, 2.
Pulaskose, Pirsson, 4.
Pumice, Bergeat, 3.
Pumice, Diller, 7.
Purpurite, Graton and Schaller, 1.
Pyrite, Eckel, 16.
Pyrite, Stokes, 1.
Pyrite, Winchell (H. V.), 2.
Pyrope, Clarke (F. W.), 1.
Pyrophyllite, Clarke (F. W.), 1.
Pyrophyllite, Clarke and Steiger, 1.
Pyroxene, Clarke (F. W.), 1.
Pyroxene, Osann, 2.
Pyroxene, Phalen, 1.
Pyroxene, Pirsson, 4.
Pyroxene, Turner, 4.
Pyroxene, Winchell (A. N.), 3.
Pyroxene-andesite, Cross and Howe, 1.
Pyroxene andesite, Watson (T. L.), 6.
Pyroxene-syenite, Cross (W.), 6.
Pyroxenite, Bascom, 3.

Chemical analyses—Continued.
Pyroxenite, Turner, 2.
Pyroxenite, Washington, 1.
Pyroxenite (websterite), Bascom, 1.
Pyrrhotite, Dickson, 4.
Pyrrhotite, Hoffmann, 6.
Quartz augite syenite, Cushing, 3.
Quartz basalt, Calkins, 1.
Quartz-biotite-diorite, Osmont, 1.
Quartz-biotite-hornblende-gabbro, Bascom, 1.
Quartz-feldspar-porphyry, Iddings, 3.
Quartz-diorite, Jaggar and Palache, 1.
Quartz-diorite-porphyry, Barrell, 1.
Quartzite, Bascom, 3.
Quartzite, Watson (T. L.), 9.
Quartz-latite, Cross and Howe, 1.
Quartz-mica-diorite, Ransome, 6.
Quartz-monzonite, Bascom, 3.
Quartz-monzonite, Cross and Howe, 1.
Quartz-monzonite, Daly, 7.
Quartz-monzonite, Lindgren, 21.
Quartz-monzonite, Phalen, 1.
Quartz-monzonite, Ransome, 6.
Quartz-monzonite, Weed, 5.
Quartz-monzonite-porphyry, Lindgren, 28, 29.
Quartz porphyry, Bayley, 1.
Quartz-porphyry, Le Roy, 1.
Quartz-porphyry, Perry, 1.
Quartz-porphyry, Watson (T. L.), 14.
Quartz pseudomorph, Schaller, 3.
Quartz-pyroxenite-diorite, Lindgren, 1.
Quartz-sericite-schist, Daly, 7.
Quartz-syenite-porphyry, Cross (W.), 6.
Quartz-syenite-porphyry, Cross and Howe, 1.
Quartz syenite porphyry, Cushing, 3.
Quartz-syenite-porphyry, Le Roy, 1.
Ralstonite, Bøggild, 5.
Ramosite, Luquer, 3.
Ranite, Barlow, 4.
Reddingite, Brush and Dana, 2.
Redingtonite, Clarke (F. W.), 1.
Rhodochrosite, Bøggild, 5.
Rhodolite, Pratt and Lewis, 1.
Rhodonite, Richardson (C. H.), 2.
Rhyolite, Calkins, 1.
Rhyolite, Cross and Howe, 1.
Rhyolite, Duryee, 1.
Rhyolite, Fairbanks, 7.
Rhyolite, Farrington, 13.
Rhyolite, Lindgren and Drake, 2.
Rhyolite, Ordoñez, 1.
Rhyolite, Ransome, 11.
Rhyolite, Reid (J. A.), 1.
Rhyolite, Russell, 13.
Rhyolite, Spurr, 2, 29.
Rhyolite, Watson (T. L.), 14.
Rhyolite, Weidman, 5.
Rhyolitic tuff, Calkins, 1.
Rickardite, Ford (W. E.), 2.
Riebeckite (?), Clark and Steiger, 1.
Riebeckite, Wright (F. E.), 3.
Riebeckite trachyte, Cross (W.), 6.
Rinkite, Bøggild, 5.

Chemical analyses—Continued.
  Roscoelite, Clarke (F. W.), 1.
  Roscoelite, Lindgren, 3, 4.
  Rowlandite, Clarke (F. W.), 1.
  Rowlandite, Simonds, 3.
  Rutile, Clarke (F. W.), 1.
  Salt, Richardson (G. B.), 4, 7.
  Salt (commercial), Eckel, 26.
  Salt brine, Lane, 12.
  Samarskite, Clarke (F. W.), 1.
  Sand, molding, Eckel, 14.
  Sandstone, Ihlseng, 1.
  Sandstone, Shedd, 2.
  Sandstone, Ransome, 3.
  Sapphirine, Böggild, 5.
  Saussurite, Clarke (F. W.), 1.
  Scapolite, Gordon (C. H.), 5.
  Scapolite, Osann, 2.
  Schalstein, Julien, 7.
  Schist, Bayley, 1.
  Schist, Hoffman, 1.
  Schizolite, Böggild, 2, 5.
  Schizolite, Böggild and Winther, 1.
  Schorlomite, Barlow, 4.
  Scolecite, Böggild, 5.
  Scolecite, Clarke (F. W.), 1.
  Scolecite, Clarke and Steiger, 1.
  Scolecite, Steiger, 2.
  Scorodite, Clarke (F. W.), 1.
  Selenite, Rowe, 3.
  Sepiolite, Pratt and Lewis, 1.
  Sericite, Lindgren, 29.
  Serpentine, Böggild, 5.
  Serpentine, Clarke (F. W.), 1, 2.
  Serpentine, Clarke and Steiger, 1.
  Serpentine, Eyerman, 1.
  Serpentine, Leonard, 1.
  Serpentine, Lyon, 1.
  Serpentine, Marsters, 3.
  Serpentine, Newland, 1.
  Serpentine, Peck, 6.
  Serpentine, Pratt and Lewis, 1.
  Serpentine, Sears, 1.
  Serpentine, Shedd, 2.
  Serpentine, Smith (G. O.), 13.
  Serpentine, Smith and Willis, 1.
  Shale, Bassler, 2, 3.
  Shale, Catlett, 3.
  Shale, Eckel, 4, 25, 28, 34.
  Shale, Haworth and Schrader, 1.
  Shale, Ihlseng, 1.
  Shale, Richardson (G. B.), 2.
  Shale, Russell, 6.
  Shale, Watson (T. L.), 9, 17.
  Shale, Weed, 18.
  Shale, bituminous, Parks, 4.
  Shonkinite, Osann, 2.
  Shonkinite, Pirrson, 1, 3, 4.
  Shonkinite, Washington, 1.
  Shonkinite, Weed and Pirsson, 1.
  Shonkinose, Pirsson, 4.
  Shoshonose, Pirsson, 4.
  Siebert tuff, Nevada, Spurr, 29.
  Silica powder, Leith, 4.
  Sillimanite, Clarke (F. W.), 1.
  Sinter, baritic, Headden, 3.
  Slag, Eckel, 17.

Chemical analyses—Continued.
  Slag cement, Eckel, 17.
  Slate, Bayley, 1.
  Slate, Eckel, 24, 25, 27, 28.
  Slate, Leith, 4.
  Slate, Weidman, 5.
  Smithsonite, Branner, 2.
  Smithsonite, Clarke (F. W.), 1.
  Soda, Darton, 18.
  Soda-granite-porphyry, Clarke and Steiger, 1.
  Soda niter, Clarke (F. W.), 1.
  Sodalite, Bonney, 1.
  Sodalite, Clarke (F. W.), 1.
  Sodalite, Clarke and Steiger, 1.
  Sodalite, Pirsson, 4.
  Sodalite-nepheline syenite, Weidman, 4.
  Sodalite-syenite, Adams (F. D.), 7.
  Soil, Russell, 6.
  Soils, Barbour (E. H.), 8.
  Soils, Reagan, 1.
  Soils, Whitney (M.), 1.
  Sölvsbergite, Sears, 1.
  Sölvsbergite-tinguaite, Pirsson, 4.
  Souesite, Hoffmann, 7.
  Spangolite, Penfield, 3.
  Sperrylite, Wells, 1.
  Sphalerite, Branner, 2.
  Sphalerite, Watson (T. L.), 17.
  Spessartite, Clarke (F. W.), 1.
  Spessartite, Simonds, 3.
  Spinel, Böggild, 5.
  Spinel, Clarke (F. W.), 1.
  Spinel, Pratt and Lewis, 1.
  Spodiophyllite, Böggild, 5.
  Spodumene, Brush and Dana, 4.
  Spodumene, Schaller, 1.
  Staurolite, Clarke (F. W.), 1.
  Staurolite, Pratt and Lewis, 1.
  Steenstrupite, Böggild, 5.
  Steenstrupite, Böggild and Winther, 1.
  Stilbite, Clarke (F. W.), 1.
  Stilbite, Clarke and Steiger, 1.
  Stilbite, Eyerman, 1.
  Stilbite, Steiger, 2.
  Stromeyerite, Clarke (F. W.), 1.
  Sulphide ore, Spurr, 29.
  Sulphur waters, Phillips (W. B.), 5.
  Syenite, Dresser, 5, 9.
  Syenite, Kay, 1.
  Syenite, Pirsson, 1.
  Syenite, Weed and Pirsson, 1.
  Syenite, basic, Cushing, 3.
  Syenite porphyry, Cushing, 3.
  Synchysite, Böggild, 5.
  Tachylite, Emerson (B. K.), 8.
  Tachylyte, Luquer, 3.
  Tainiolite, Böggild, 5.
  Talc, Blasdale, 1.
  Talc, Böggild, 5.
  Talc, Clarke (F. W.), 1.
  Talc, Peck, 6.
  Talc, Pratt and Lewis, 1.
  Tallow-clays, Branner, 2.
  Tengerite, Hidden, 1.
  Tephroite, Simonds, 3.
  Terlinguaite, Moses, 2, 4.

Chemical analyses—Continued.
Tetradymite, Hillebrand, 6.
Tetrahedrite, Chester, 1.
Thaumasite, Penfield and Pratt, 1.
Thalénite, Hillebrand, 6.
Thenardite, Böggild, 5.
Theralite, Adams (F. D.), 7.
Theralite, Osann, 2.
Theralite, Washington, 1.
Thomsenolite, Böggild, 5.
Thomsonite, Clarke (F. W.), 1.
Thomsonite, Clarke and Steiger, 1.
Thomsonite, Steiger, 2.
Thorogummite, Simonds, 3.
Tin ore, Collier, 8.
Tinguaite, Dresser, 11.
Tinguaite, Kemp, 32.
Tinguaite, Pirsson, 4.
Tinguaite, Sears, 1.
Tinguaite, Washington, 1.
Tinguaite var., sölvsbergite, Dresser, 9.
Tinguaite-porphyry, Pirsson, 4.
Titanite, Clarke (F. W.), 1.
Titano-magnetite, Lindgren, 9.
Tonopah rhyolite-dacite, Nevada, Spurr, 29.
Topaz, Clarke (F. W.), 1.
Toscanose, Pirsson, 4.
Toscanose (grano-diorite), Cross and others, 1.
Tourmaline, Böggild, 5.
Tourmaline, Clarke (F. W.); 1.
Tourmaline, Eyerman, 1.
Trachiphyro-borolanose, Pirsson, 4.
Trachiphyro-pulaskose, Pirsson, 4.
Trachydolerite, Jagger and Palache, 1.
Trachyte, Breed, 1.
Trachyte, Cross (W.), 6.
Trachyte obsidian, Cross (W.), 6.
Trap, Weed, 18.
Tremolite, Blasdale, 1.
Tremolite, Böggild, 5.
Tremolite, Clarke (F. W.), 1.
Tremolite, Peck, 6.
Triplite, Clarke (F. W.), 1.
Triploidite, Brush and Dana, 1.
Troctolite, Pratt and Lewis, 1.
Tscheffkinite, Clarke (F. W.), 1.
Tufa, Weed, 13.
Tuff, Diller, 12.
Tuff, Shedd, 2.
Turquoise, Clarke (F. W.), 1.
Turquoise, Johnson (D. W.), 6.
Tychite, Penfield and Jamieson, 1.
Tyrolite, Clarke (F. W.), 1.
Tysonite, Allen and Comstock, 1.
Tysonite, Clarke (F. W.), 1.
Ulexite, Clarke (F. W.), 1.
Umptekite, Adams (F. D.), 7.
Umptekite, Dresser, 9.
Umptekite, Sears, 1.
Umptekose, Pirsson, 4.
Uralite, Weidman, 2.
Uraninite, Clarke (F. W.), 1.
Uranophane, Watson (T. L.), 7.
Urao, Clarke (F. W.), 1.
Vermiculite, Clarke (F. W.), 1.

Chemical analyses—Continued.
Vesuvianite, Clarke (F. W.), 1.
Vesuvianite, Clarke and Steiger, 2.
Vesuvianite, Kunz, 5.
Vesuvianite, Sears, 1.
Vesuvianite, Turner, 4.
Vesuvose-albanose (leucitite), Cross and others, 1.
Villarsite, Pratt and Lewis, 1.
Volcanic ash, Flett, 1.
Volcanic ash, Gillot, 1.
Volcanic ash, Hovey, 9.
Volcanic ash, Lacroix, 2, 3.
Volcanic ash, Lobley, 1.
Volcanic ash, Rowe, 1.
Volcanic dust, Bridgford, 1.
Volcanic dust, Diller, 7.
Volcanic dust, Diller and Steiger, 1.
Volcanic dust, Griffiths, 1.
Volcanic dust, Hillebrand, 1.
Volcanic dust, Teall, 1.
Volcanic sand, Diller, 7.
Waluewite, Clarke (F. W.), 1.
Warrenite, Clarke (F. W.), 1.
Warwickite, Clarke (F. W.), 1.
Water, Babcock and Minor, 1.
Water, Bayley, 2.
Water, Blake (W. P.), 4.
Water, Boutwell, 7.
Water, Cooper (W. F.), 1, 2.
Water, Crosby, 9.
Water, Crosby and La Forge, 1.
Water, Darton, 18.
Water, Eckel, 26.
Water, Eisele, 1.
Water, Fuller (M. L.), 13, 18.
Water, Gallaher, 1.
Water, Gould, 14.
Water, Gregory (H. E.), 2.
Water, Hall (C. W.), 8.
Water, Harris, 8.
Water, Harwood, 1.
Water, Headden, 3.
Water, Hoffmann, 6
Water, Keyes, 49.
Water, Kirchoffer, 1.
Water, Lee (W. T.), 9.
Water, Lindgren, 28.
Water, Logan, 2.
Water, Logan and Perkins, 1.
Water, McCallie, 8.
Water, Perkins, 8.
Water, Park and Lyman, 1.
Water, Peter, 1.
Water, Purdue, 5.
Water, Richardson (G. B.), 4.
Water, Russell, 8.
Water, Smith (E. A.), 5.
Water, Smith (W. S. T.), 4.
Water, Shepard, 2, 4.
Water, Tarr, 8.
Water, Taylor (F. B.), 5.
Water, Weed, 13.
Water, Weeks, 11.
Water, Weidman, 5
Water (of streams), Headden, 2.
Websterite, Leonard, 1.

Chemical analyses—Continued.

- Websterite, Pratt and Lewis, 1.
- Websterite, Turner, 2.
- Wellsite, Pratt and Foote, 1.
- Wellsite, Pratt and Lewis, 1.
- Willcoxite, Pratt and Lewis, 1.
- Willemite, Böggild, 5.
- Williamsite, Pratt and Lewis, 1.
- Windsorite, Daly, 7.
- Wolframite, Böggild, 5.
- Wolframite, Irving, 1.
- Wolframite, O'Hara, 2.
- Wolframite, Simmons, 1.
- Wolframite ore, Irving and Emmons, 1.
- Wollastonite, Böggild, 5.
- Wollastonite, Clarke (F. W.), 1.
- Wollastonite, Clarke and Steiger, 1.
- Wyomingite, Clarke and Steiger, 1.
- Xanthitane, Clarke (F. W.), 1.
- Xanthophyllite, Clarke (F. W.), 1.
- Xenotime, Clarke (F. W.), 1.
- Xenotime, Kraus and Reitinger, 1.
- Yttrialite, Clarke (F. W.), 1.
- Yttrialite, Hillebrand, 2, 7.
- Yttrialite, Simonds, 3.
- Zinc-blende, Eakle and Sharwood, 1.
- Zinc ore, Demaret, 1.
- Zinkenite, Clarke (F. W.), 1.
- Zinnwaldite, Böggild, 5.
- Zoisite, Clarke (F. W.), 1.
- Zoisite, Pratt and Lewis, 1.
- Zoisite amphibolite, Julien, 7.
- Zunyite, Clarke (F. W.), 1.

Classification.

- Classification of geologic formations of Tennessee, Safford, 2.
- Classification of igneous rocks, Daly, 12.
- Classification of New York geologic formations, Clarke (J. M.), 20.
- Classification of the Archean, Coleman, 6.
- Classification of upper Cretaceous formations of New Jersey, Weller, 12.
- Correlation of Colorado geological formations, Underhill, 1.
- Cretaceous formations and faunas of New Jersey, Weller, 7.
- Discrimination of time values in geology, Williams (H. S.), 1.
- Dual classification required in the nomenclature of geological formations in Canada, Ami, 14.
- Eparchæan interval, Lawson (A. C.), 4.
- Formations as the basis for geologic mapping, Eckel, 1.
- Formations of northern Arkansas, Ulrich, 5.
- Genesis of Animikie iron range, Hille, 3.
- Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
- Geological nomenclature, Bain, 7.
- Geology and paleontology of the Judith River beds, Stanton and Hatcher, 1.
- Geology and water resources of Oklahoma, Gould, 14.

Classification—Continued.

- Geology of eastern New York, Prosser, 11.
- Historical review of geology of Michigan, Lane, 36.
- Huronian of Moose River Basin, Parks, 1.
- Individuals of stratigraphic classification, Bain, 4.
- Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich, 8.
- Michipicoten iron ranges, Coleman and Willmott, 2.
- Nomenclature and classification of sedimentary formations, Williams (H. S.), 8.
- Nomenclature of Ohio geological formations, Prosser, 15.
- Oberdevon Europas und Nordamerikas, Hartzell, 1.
- Ordovician rocks of Kentucky and their bryozoa, Nickles, 6.
- Phylogeny and classification of the Reptilia, Hay, 19.
- Phylogeny and classification of the Reptilia, Osborn, 54.
- Phylogeny and classification of the Reptilia, Williston, 27.
- Quantitative chemico-mineralogical classification and nomenclature of igneous rocks, Cross and others, 1.
- Relationships and habits of Mosasaurs, Williston, 19.
- Report on Lake Superior region, Van Hise and others, 1.
- Tenth annual report of State geologist, Calvin, 5.

Colorado.

- Across the San Juan Mountains, Rickard (T. A.), 7.
- Age of the Monument Creek formation, Darton, 23.
- Aguilar coal and oil district, Lakes, 39.
- American Nettie, Lakes, 1.
- Andesite of Mount Sugar Loaf, Hogarty, 1.
- Anthracite situation in Colorado, Lakes, 81.
- Arapahoe glacier in 1902, Fenneman, 3.
- Arapahoe glacier in 1903, Henderson (J.), 2.
- Arapahoe glacier in 1905, Henderson (J.), 5.
- Aspen mining region, Lakes, 22.
- Barela Mesa coal field, McLaughlin, 1.
- Basaltic zones as guides to ore deposits, Stevens (E. A.), 2.
- Bastnasite and tysonite, Allen and Comstock, 1.
- Book Cliff coal mines, Lakes, 66.
- Boulder oil field, Fenneman, 4.
- Buckhorn mine and San Luis Park, Lakes, 20.
- Building and monumental stones, Lakes, 12.
- Building stones, Lakes, 13.

Colorado—Continued.
Camp Bird and Smuggler-Union fissures, Purington, 10.
Camp Bird gold mine, Titcomb, 1.
Camp Bird mine, Ouray, Purington, 3.
Canyons of southeastern Colorado, Lee (W. T.), 4.
Carboniferous formations and faunas of Colorado, Girty, 3.
Carboniferous of Sangre de Cristo Range, Lee (W. T.), 5.
Carnotite and associated vanadiferous minerals in western Colorado, Hillebrand and Ransome, 1.
Cave ore deposits, Lakes, 4.
Cement materials and industry of the United States, Eckel, 34.
Coal along the eastern foothills, Lakes, 82.
Coal and asphalt deposits along Moffat Railway, Lakes, 60.
Coal and mineral resources of Routt County, Parsons and Liddell, 1.
Coal field between Ralston Creek and Boulder, Lakes, 86.
Coal fields of Colorado, Lakes, 62, 80.
Coal mines of Huerfano County, Lakes, 99.
Coal on Turkey Creek, Stone (G. H.), 3.
Coals of southern Colorado, Lakes, 85.
Colorado Canyon, Davis (W. M.), 61.
Colorado Central lode, Foster, 1.
Colorado: Report of State Bureau of Mines, Lee (H. A.), 1.
Comanche formation in southeastern Colorado, Darton, 24.
Comparison of fossil diatoms, Elmore, 1.
Copper deposits at Pearl, Spencer (A. C.), 7.
Creede mining camp, Lakes, 50.
Copper mining in the Encampment and Pearl districts, Read, 4.
Correlation of Colorado geological formations, Underhill, 1.
Creston mining district in San Luis Park, Lakes, 29.
Cripple Creek, Lakes, 2.
Cripple Creek volcano, Rickard (T. A.), 1.
Crystalline development of calaverite, Smith (G. F. H.), 1.
Curtis coal mine, Lakes, 3.
Development of pseudomorphs, Patton, 2.
Devonian fish remains from Colorado, Eastman, 16.
Devonian formation in Colorado, Cross (W.), 5.
Dinosaur beds of the Grand River Valley, Riggs, 1.
Dinosaur beds of Grand River Valley of Colorado, Riggs and Farrington, 1.
District aurifère de Cripple Creek, Ritter, 1.
Doughty springs, a group of radium-bearing springs, Headden, 3.

Colorado—Continued.
Economic geology, La Plata folio, Purington, 1.
Economic geology of the Silverton quadrangle, Ransome, 1.
Economic resources of the foothills of the front range, Lakes, 91.
Effect of cliff erosion on form of contact surfaces, Fenneman, 6.
Eocene and earlier beds of Huerfano Basin, Colorado, Hills, 2.
Emmonsite from a new locality, Hillebrand, 4.
Eruptive rocks of Cripple Creek, Graton, 4.
Example of localization of rich ore, Rickard (T. A.), 6.
Examples of Colorado faults, Lakes, 95.
Extinct glaciers of Colorado, Henderson (J.), 4.
Fault planes in the Dakota fire-clay beds at Golden, Patton, 3.
Faults in Dakota formation at Golden, Patton, 4.
Florence oil field, Fenneman, 9.
Formation of bonanzas in upper portions of gold veins, Rickard (T. A.), 3.
Formation of Cripple Creek mining district, Moore (C. J.), 1.
Formation of Leadville mining district, Moore (C. J.), 2.
Fossil mammals of Tertiary of northeastern Colorado, Matthew (W. D.), 2.
Franceville meteorite, Preston (H. L.), 2, 3.
Garnetiferous bed in Golden Gate Canyon, Bailey, Rath, and Grider, 1.
Genesis of ore deposits in Boulder County, Bagg, 2.
Geological excursion in Colorado, Van Hise, 6.
Geological occurrence of oil, Lakes, 19.
Geological phenomena in the Telluride quadrangle, Lay, 1.
Geological resurvey of the Cripple Creek district, Lindgren and Ransome, 1, 2.
Geological structure of Camp Bird vein, Purington, 5.
Geology along the Animas River, Lakes, 25.
Geology and coal deposits of the Spanish Peaks district, Lakes, 85.
Geology and economics along Moffat Railway, Lakes, 49.
Geology and underground water resources of the central Great Plains, Darton, 18.
Geology of Castle Rock region, Lee (W. T.), 2.
Geology of hot springs of Colorado, Lakes, 90, 103.
Geology of Silverton quadrangle, Cross, 1.
Geology of the Needle Mountains quadrangle, Cross and Howe, 3.

Colorado—Continued.

Geology of the Needle Mountains quadrangle, Irving and Emmons, 1.
Geology of the oil fields of Colorado, Lakes, 15.
Geology of the ore deposits of the Ouray district, Howe, 4.
Geology of the Rico quadrangle, Cross (W.), 7.
Geology of Virginius mine, Purington, 7.
Geology of western ore deposits, Lakes, 104.
Gisements de minerais de zinc, Demaret, 1.
Glacial erosion in the Sawatch Range, Davis (W. M.), 54.
Glacial placer beds on flanks of Mosquito Range, South Park, Lakes, 30.
Glaciation of the Sawatch Range, Davis (W. M.), 58.
Gold production of North America, Austin, 5.
Gold production of North America, Lindgren, 16.
Gold deposits of Plomo, Gunther, 1.
Grand River coal field, Lakes, 87.
Granite of west Sugar Loaf Mountain, Henry, 1.
Greenstone schists in the San Juan Mountains, Howe, 3.
Grottes des États-Unis, Le Couppey de la Forest, 1.
Gypsum deposits in Colorado, Lakes, 61.
Hallopus, Baptanodon, and Atlantosaurus beds of Marsh, Williston, 25.
Hanging valleys of Georgetown, Crosby, 6.
Hot and mineral springs of Routt County, Colorado, Lakes, 97.
Influence of country-rock on mineral veins, Weed, 6.
Jurassic dinosaur deposits near Canyon City, Hatcher, 6.
La Plata coal field, Lakes, 84.
La Plata folio, Cross and Spencer, 1.
La Plata Mountains, Lakes, 41.
Leadville district, Warwick, 2.
Lodes of Cripple Creek, Rickard (T. A.), 8, 12.
Mica-andesite of west Sugar Loaf Mountain, Blake (J. C.), 1.
Mineralogical mistake, Van Diest, 1.
Mineralogical notes, Headden, 1, 4.
Mineralogical notes, Warren, 1.
Mines and ore deposits of the Rosita and Silver Cliff mining district, Lakes, 53.
Mines of Ouray County, Downer and De Cou, 1.
Morrison formation, Lee (W. T.), 1.
Morrison formation, Stanton, 8.
Morrison shales of southern Colorado and northern New Mexico, Lee (W. T.), 3.
Natural gas in Colorado, Lakes, 26.

Colorado—Continued.

Neglected mine and Nearby properties, Emmons (W. H.), 1.
New Canidæ from Miocene of Colorado, Matthew (W. D.), 5.
New genus and species from Jurassic of Colorado, Hay, 8.
New sauropod dinosaur from Jurassic of Colorado, Hatcher, 18.
New species of Cladodus from the Devonian, Hay, 4.
Nodular-bearing schists near Pearl, Read, 2.
Occurrence of limburgite, Stevens (E. A.), 1.
Occurrence of mica in Boulder County, Schwarz, 1.
Occurrence of ore at Red Mountain, Schwarz, 2.
Oil field of Mesa and Rio Blanco counties, Lakes, 24.
Oil-impregnated volcanic dikes, Lakes, 98.
Oil in Colorado, Lakes, 21.
Oil situation in Colorado, Lakes, 48.
Oil springs of Rio Blanco County, Lakes, 17.
Olivinite dike of Magnolia district, Whitaker, 1.
Ore deposits in Georgetown mining district, Spurr and Garrey, 1.
Ore deposits near Lake City, Irving, 7.
Ore deposits of Colorado, Lakes, 73.
Ore deposits of Rico Mountains, Ransome, 3.
Ore deposits of the American-Nettie mine, Ouray, Downer, 1.
Ore deposits of the Ouray district, Irving, 6.
Ore deposits of the Ouray quadrangle, Irving, 9.
Ore horizons in San Juan Mountains, Purington, 11.
Ore occurrence at Leadville, Robbins, 1.
Overturns in the Denver basins, Henderson (J.), 1.
Paleontology of the Boulder area, Henderson (J.), 3.
Peat and its relation to coal, Lakes, 96.
Peculiar ore deposit, Colburn, 1.
Plastic dike near Ouray, Ransome, 2.
Pleistocene geology of the Sawatch Range, near Leadville, Capps and Leffingwell, 1.
Prairie region of northeastern Colorado, Lakes, 32.
Prospecting for oil, Lakes, 11, 16.
Prospecting for oil in the region of the cliff dwellers, Lakes, 27.
Radium in an American ore, Phillips (A. H.), 1.
Red beds of Colorado, Cross and Howe, 2.
Red Beds of southwestern Colorado, Cross and Howe, 4.
Redcliff ore deposits, Lakes, 44.

Colorado—Continued.
Report State Bureau of Mines, Lee (H. A.), 1.
Rickardite, Ford (W. E.), 2.
Rocky Mountain coal fields, Storrs (L. S.), 1.
Secondary enrichment at Cripple Creek, Weed, 21.
Silver Lake mine, Lakes, 47.
Silverton folio, Cross and Howe, 1.
Silverton folio, Ransome, 16.
Skeleton of Merycodus, Matthew (W. D.), 14.
Soils of Colorado, Lakes, 40.
South Park coal field, Lakes, 89.
South Park, Lakes, 35.
Spanish Peaks folio, Hills, 1.
Spanish Peaks, Lakes, 28.
Stratigraphy of the Black Hills, Darton, 2.
State geological survey for Colorado, Finch (J. W.), 2.
Structure of Boulder oil field, Fenneman, 5.
Subterranean gases of Cripple Creek, Lindgren, 31.
Summit County placers, Lakes, 43.
Sunset trachyte, Breed, 1.
Telluride ores of Cripple Creek and Kalgoorlie, Rickard (T. A.), 2.
Tellurium veins in La Plata Mountains, Austin, 1.
Tercio and Cuatro mines, Hosea, 1.
Tercio coal mining district, Plumb, 1.
Tissu osseux chez certains poissons de Canyon City, Vaillant, 1.
Tortoise from Colorado Miocene, Hay, 17.
Twin Lakes glaciated area, Westgate, 1.
Two tellurium minerals from Colorado, Hillebrand, 6.
Veins of Boulder and Kalgoorlie, Rickard (T. A.), 11.
Veins of Boulder County, Bagg, 3.
Volcanoes, Lakes, 34.
Water resources of Colorado, Fellows, 1.
Yampa coal fields, Lakes, 65.
Yampa coal field, Lakes, 88.

Connecticut.
Cement materials and industry of the United States, Eckel, 34.
Clays of Connecticut, Loughlin, 1.
Clays of the United States, Ries, 6.
Corundum and essonite from Barkhamsted, Emerson (B. K.), 1.
Description of new species from Branchville, Brush and Dana, 1.
Fifth Branchville paper, Brush and Dana, 5.
Fossil wood from the Newark formation, Knowlton, 3.
Glacial and post-Glacial history of the Hudson and Champlain valleys, Peet, 1.
Glacial remains near Woodstock, Egleston, 1.

Connecticut—Continued.
Hematite deposits of New York, Eckel, 30.
Instance of action of ice-sheet upon projecting rock masses, Hobbs, 12.
Limonite deposits of New York and New England, Eckel, 36.
Newark system of the Pomperaug Valley, Hobbs, 2.
Occurrence of minerals at Haddam Neck, Bowman (H. L.), 1.
Physical geography and geology of Connecticut, Rice, 1.
Post-Newark normal faulting in the crystalline rocks of southwestern New England, Hobbs, 20.
River system of Connecticut, Hobbs, 3.
Second Branchville paper, Brush and Dana, 2.
Spodumene and results of its alteration, Brush and Dana, 4.
Still rivers of western Connecticut, Hobbs, 6.
Tectonic geography of southwestern New England and southeastern New York, Hobbs, 23.
Third Branchville paper, Brush and Dana, 3.
Trap rock of Connecticut Valley, Ford (F. L.), 1.
Triassic rocks of the Connecticut Valley as a source of water supply, Fuller, 18.
Tungsten mine at Trumbull, Hobbs, 5, 16.
Underground waters of Connecticut, Gregory (H. E.), 1.
Water resources of Connecticut, Gregory (H. E.), 2.
Wells of Triassic area of Connecticut Valley, Pynchon, 11.

Correlation.
Carboniferous ammonoids of America, Smith (J. P.), 3.
Carboniferous of the Appalachian basin, Stevenson (J. J.), 6.
Carboniferous system of New Brunswick, Bailey (L. W.), 8.
Classification of the Archean, Coleman, 6.
Coal prospects of New Brunswick, Poole, 8.
Cobleskill limestone of New York, Hartnagel, 1.
Columbia folio, Hayes and Ulrich, 1.
Contributions to Devonian paleontology, Williams and Kindle, 1.
Correlation des horizons de mammifères Tertiaires en Europe et en Amérique, Osborn, 5.
Correlation of Colorado geological formations, Underhill, 1.
Correlation of formations and members [of the Maryland coal district], Clark and Martin, 6.
Correlation of formations of the middle West, Hatcher, 21.

Correlation—Continued.
- Correlation of geological faunas, Williams (H. S.), 5.
- Correlation of John Day and Mascall, Merriam and Sinclair, 1.
- Correlation of Piedmont formations, Mathews, 6.
- Correlation of the Potomac formation in Maryland and Virginia, Ward (L. F.), 3.
- Cretaceous deposits of Pacific coast, Anderson (F. M.), 3.
- Cretaceous near Cliffwood, Berry, 8.
- Delaware limestone, Prosser, 13.
- Distinctive characters of the mid-Cretaceous fauna, Osborn, 12.
- Eocene and earlier beds of Huerfano basin, Colorado, Hills, 2.
- Fossil faunas and their use in correlating geological formations, Williams (H. S.), 3.
- Formations of northern Arkansas, Ulrich, 5.
- Fresh-water faunule from Cretaceous of Montana, Stanton, 4.
- Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
- Geological correlations in New Brunswick, Bailey (L. W.), 3.
- Geology and paleontology of the Judith River beds, Stanton and Hatcher, 1.
- Geology of eastern New York, Prosser, 11.
- Geology of Fishers Island, Fuller, 29.
- Helderberg invasion of the Manlius, Harris, 7.
- Individuals of stratigraphic classification, Willis, 2.
- Jackson outcrops on Red River, Casey, 1.
- Kreide-Ammoniten von Texas, Lasswitz, 1.
- Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich, 8.
- Mesabi iron-bearing district of Minnesota, Leith, 4.
- Methods of geologic correlation, Keyes, 36.
- Mollusca of Buda limestone, Shattuck, 8.
- Oberdevon Europas und Nordamerikas, Hartzell, 1.
- Ordovician rocks of Kentucky and their bryozoa, Nickles, 6.
- Paleontology of Martinez group, Weaver, 1.
- Paleozoic faunas, Weller 6.
- Permian formations of Kansas, Prosser, 14.
- Petrography and age of the Northumberland rock, Cushing, 7.
- Red Beds of Colorado, Cross and Howe, 2.
- Report of State paleontologist, Clarke (J. M.), 11.
- Report on Lake Superior region, Van Hise and others, 1.

Correlation—Continued.
- Romney formation of Maryland, Prosser, 12.
- Schematic standard for the American Carboniferous, Keyes, 7.
- Siluric or Ontaric section of eastern New York, Hartnagel, 2.
- Sixth annual report of the State geologist, Lane, 49.
- Stratigraphy of Black Hills, Bighorn Mountain, and Rocky Mountain front range, Darton, 16.
- Stratigraphy of Uinta Mountains, Berkey, 8.
- Südlichsten Vulkane Mittel-Amerikas, Sapper, 2.
- Summary of Lake Superior geology, Leith, 14.
- Table of geological formations, Shepard, 1.
- Tertiary of Sabine River, Dumble, 10.
- Time divisions of Ice Age, Upham, 5.
- Time element in stratigraphy and correlation, Dall, 17.
- Time element in stratigraphy and correlation, Stanton, 9.
- Time element in stratigraphy and correlation, Ulrich, 9.
- Time element in stratigraphy and correlation, White, 20.
- Triassic cephalopod genera, Hyatt and Smith, 1.
- Upper Paleozoic rocks of Ohio and Pennsylvania, Girty, 10.

Cretaceous.
- *Alaska.*
  - Coal resources of Alaska, Brooks, 3.
  - Geological section of Rocky Mountains in northern Alaska, Schrader, 1.
  - Geology of Copper River region, Mendenhall, 8.
  - Mesozoic section on Cook Inlet, Stanton and Martin, 1.
  - Reconnaissance in Alaska, Schrader, 3.
- *Atlantic coast region.*
  - Artesian wells, Woolman, 2.
  - Atlantic Highlands section, Prather, 4.
  - Classification of upper Cretaceous formations of New Jersey, Weller, 12.
  - Cliffwood clays and the Matawan, Knapp (G. N.), 2.
  - Columbia University Geological Department, Shimer, 4.
  - Correlation of the Potomac formation, Ward (L. F.), 3.
  - Cretaceous formations and faunas of New Jersey, Weller, 7.
  - Cretaceous near Cliffwood, N. J., Berry, 8.
  - Cretaceous-Eocene boundary in the Atlantic coastal plain, Clark (W. B.), 4.
  - Fauna of Cliffwood clays, Weller, 10.
  - Flora of the Matawan formation, Berry, 5.
  - Geology of Coastal Plain formations, Shattuck, 7.

Cretaceous—Continued.
- *Atlantic coast region*—Continued.
  - Geology of Potomac group in middle Atlantic slope, Clark and Bibbins, 1.
  - Matawan formation, Clark (W. B.), 5.
  - Miocene deposits of Maryland, Clark (W. B.), 6.
  - New York City folio, Merrill and others, 1.
  - Norfolk folio, Darton, 7.
  - Paleobotany of the Cretaceous of Long Island, Hollick, 11.
  - Physical features of Cecil County, Md., Shattuck, 3.
  - Position and nature of Maryland Cycads, Bibbins, 2.
  - Results of resurvey of Long Island, Fuller and Veatch, 1.
  - Status of Mesozoic floras, Ward (L. F.), 5.
  - Stratigraphy of the New Jersey Clays, Kümmel and Knapp, 1.
  - Underground waters of New Jersey, Knapp (G. N.), 1.
  - Washington folio, Darton and Keith, 1.
- *Canada.*
  - Age of Lance Creek beds of Wyoming, Judith River beds of Montana, and Belly River beds of Canada, Hatcher, 17.
  - Coal basins in Rocky Mountains, Dowling, 7.
  - Coal mining in the Northwest Territories, Smith (F. B.), 1.
  - Crows Nest coal fields, Leach (W. W.), 1.
  - Distinctive characters of the Mid-Cretaceous fauna, Osborn, 12.
  - Dryptosaurus incrassatus, Lambe, 8.
  - Geological record of Rocky Mountain region, Dawson, 2.
  - Geological sketch of the Bankhead coal field, Turnbull, 1.
  - Geologie von Canada, Haas, 2.
  - Geology of Yellow Head Pass route, McEvoy, 1.
  - New vertebrates of the mid-Cretaceous, Osborn, 13.
  - Red Deer River, Alberta, Lambe, 4.
  - Stratigraphy of the Cascade coal basin, Dowling, 10.
  - Synopsis of geology of Canada, Ami, 2.
  - Trionyx foveatus Leidy and Trionyx vagans Cope from Cretaceous rocks of Alberta, Lambe, 5.
  - Turtle from Cretaceous rocks, Lambe, 1.
- *Great Basin region.*
  - Bisbee folio, Ransome, 14.
  - Clifton folio, Lindgren, 28.
  - Copper deposits of Clifton-Morenci district, Lindgren, 29.
  - Geology and copper deposits of Bisbee, Ransome, 10.
  - Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
  - Geology of Nevada, Spurr, 6.

Cretaceous—Continued.
- *Great Basin region*—Continued.
  - Notes on geology of southeastern Arizona, Dumble, 7.
- *Great Plains region.*
  - Age of Atlantosaurus beds, Lee (W. T.), 7.
  - Age of Lance Creek beds of Wyoming, Judith River beds of Montana, and Belly River beds of Canada, Hatcher, 17.
  - Alexandria folio, Todd and Hall, 1.
  - Aladdin folio, Darton and O'Harra, 1.
  - Baked clays and natural slags in eastern Wyoming, Bastin, 1.
  - Benton and Niobrara formations of Nebraska, Condra, 5.
  - Benton formation in eastern South Dakota, Todd (J. E.), 13.
  - Coal fields of Kansas, Crane, 4.
  - Coal resources of Wyoming, Trumbull, 1.
  - Concretions of the Pierre shale, Barbour (C. A.), 2.
  - Correlation of formations of the middle West, Hatcher, 21.
  - Dakota Cretaceous of Kansas and Nebraska, Gould, 5.
  - Dakota sandstone in Washington County, Kans., Charles, 1.
  - De Smet folio, Todd and Hall, 3.
  - Discovery of the Laramie in Nebraska, Fisher (C. A.), 3.
  - Economic geology of the Pembina region, Berkey, 7.
  - Edgemont folio, Darton and Smith, 1.
  - Faults in Dakota formation at Golden, Patton, 4.
  - Geological observations on the Rosebud Indian Reservation, Reagan, 5.
  - Geology and paleontology of the Judith River beds, Stanton and Hatcher, 1.
  - Geology and underground water resources of the central Great Plains, Darton, 18.
  - Geology and water resources of Patrick and Goshen Hole quadrangles, Adams (G. I.), 4.
  - Geology and water resources of the James River Valley, Todd and Hall, 2.
  - Geology of Lincoln County, S. Dak., Bendrat, 1.
  - Hallopus, Baptanodon, and Atlantosaurus beds of Marsh, Williston, 25.
  - Hartville folio, Smith (W. S. T.), 1.
  - Huron folio, Todd (J. E.), 15.
  - Jefferson County, Nebr., Carmony, 1.
  - Judith River beds, Hatcher, 20.
  - Laramie and Fort Union beds in North Dakota, Wilder, 7.
  - Laramie Cretaceous of Wyoming, Williston, 13.
  - Leucite hills of Wyoming, Kemp and Knight, 1.
  - Lignite deposits of North Dakota, Wilder, 1, 2.

Cretaceous—Continued.
Great Plains region—Continued.
Lignite on the Missouri, Heart, and Cannon Ball rivers, Wilder, 10.
Mitchell folio, Todd (J. E.), 11.
Morrison formation, Stanton, 8.
Morrison shales of southern Colorado and northern New Mexico, Lee (W. T.), 3.
New armored dinosaur, Williston, 26.
Newcastle folio, Darton, 14.
Oelrichs folio, Darton, 8.
Olivet folio, Todd (J. E.), 9.
Parker folio, Todd (J. E.), 10.
Recent zoopaleontology, Osborn, 21.
Report of State geologist of Nebraska, Barbour (E. H.), 8.
Restoration of Dolichorhyncops osborni, Williston, 9.
Skeleton of Nyctodactylus with restoration, Williston, 8.
Stratigraphic position of Judith River beds, Stanton, 3.
Stratigraphy and paleontology of Black Hills rim, Wieland, 11.
Studies in the Mentor beds, Jones (A. W.), 1.
Sundance folio, Darton, 26.
Tests for gold and silver in shales from western Kansas, Lindgren, 7, 8.
Topographic features and geological formations of North Dakota, Leonard, 4.
Uintacrinus, Springer (F.), 1.
Water resources of Devils Lake region, Babcock, 2.
Gulf region.
Cement resources of Alabama, Smith (E. A.), 3.
Hills of Louisiana north of V. S. & P. Railroad, Lerch, 1.
Hills of Louisiana south of V. S. & P. Railroad, Lerch, 2.
Portland-cement materials of Alabama, Smith (E. A.), 2.
Preliminary report upon Florida parishes of east Louisiana, Clendenin, 1.
Salines of north Louisiana, Veatch, 1.
Subterranean waters of Louisiana, Harris, 3.
Underground waters of Louisiana and Arkansas, Veatch, 7.
Mexico.
Coal mines at Las Esperanzas, Ries, 9.
Coal fields of Las Esperanzas, Ludlow, 1.
Cretaceous of Obispo Canyon, Dumble, 4.
Criaderos de fierro de la hacienda de Vaquerias, Villarello and Böse, 1.
Geographic and geologic features and their relation to the mineral products of Mexico, Hill (R. T.), 4.
Geologia del valle de Chilpancingo, Ordoñez and Böse, 1.
Geología de Chiapas y Tabasco, Böse, 7.
Cretaceous—Continued.
Mexico—Continued.
Geological section in Guerrero, Hall (C. E.), 1.
Mines in the states of Chihuahua, Sinaloa, and Sonora, Weed, 8.
Profil durch den Ostabfall der Sierra Madre Oriental, Böse, 2.
Section across the Sierra Madre Occidental of Chihuahua and Sinaloa, Weed, 9.
Mississippi Valley region.
Geological age of certain gypsum deposits, Keyes, 24.
Geological formations of Iowa, Calvin, 4.
Geology of clays, Beyer and Williams, 2.
Geology of Dakota County, Nebr., Burchard, 2.
Geology of Mills and Fremont counties, Iowa, Udden, 8.
Geology of Minnesota, Hall (C. W.), 7.
Geology of Mississippi Valley at Little Falls, Minn., Winchell (N. H.), 8.
Geology of Oktibbeha County, Miss., Logan, 2.
Geology of Page County, Iowa, Calvin, 1.
Geology of Pottawattamie County, Iowa, Udden, 3.
Smoking bluffs of the Missouri River region, Powers, 1.
New England and New York.
Geological and botanical notes: Cape Cod and Chappaquidick Island, Hollick, 4.
Results of resurvey of Long Island, Fuller and Veatch, 1.
Pacific coast region.
Berkeley Hills, Lawson and Palache, 1.
British Columbia coal fields, Brewer (W. M.), 6.
Coos Bay folio, Diller, 4.
Cretaceous deposits of Pacific coast, Anderson (F. M.), 3.
Crows Nest Pass coal field, Brewer (W. M.), 7.
Geological reconnaissance across the Cascade Range, Smith and Calkins, 1.
Geological section of the Coast ranges, Osmont, 1.
Geology of the John Day Basin, Merriam (J. C.), 1.
Geology of Washington, Landes, 1.
Klamath Mountain section, Diller, 12.
Marine sediments of eastern Oregon, Washburne, 1.
Mesozoic of southwestern Oregon, Louderback, 6.
Mount Diablo Range of California, Anderson (F. M.), 7.
Physiographic features of Klamath Mountains, Anderson (F. M.), 2.
Port Orford folio, Diller, 11.
San Luis folio, Fairbanks, 7.
Significance of Cretaceous outliers in Klamath region, Hershey, 11.

Cretaceous—Continued.

Rocky Mountain region.

- Age of Lance Creek beds of Wyoming, Judith River beds of Montana, and Belly River beds of Canada, Hatcher, 17.
- Aladdin folio, Darton and O'Harra, 1.
- Coal fields of Uinta County, Wyo., Knight (W. C.), 7.
- Coal on Turkey Creek, Colorado, Stone (G. H.), 3.
- Copper deposits of the Encampment district, Spencer (A. C.), 10.
- Comanche formation in southeastern Colorado, Darton, 24.
- Cretaceous and Lower Tertiary section in south central Montana, Douglass, 3.
- Dinosaur beds of the Grand River Valley, Riggs, 1.
- Fresh-water molluscan faunule from Cretaceous of Montana, Stanton, 4.
- Geology and ore deposits of Elkhorn mining district, Montana, Weed, 5.
- Geology of Black Hills, Darton, 1.
- Geology of Boulder district, Fenneman, 10.
- Geology of Castle Rock region, Lee (W. T.), 2.
- Geology of Rico quadrangle, Cross (W.), 7.
- Geology of southwestern Montana, Douglass, 10.
- Hallopus, Baptanodon, and Atlantosaurus beds of Marsh, Williston, 25.
- Jurassic dinosaur deposits near Canyon City, Hatcher, 6.
- Jurassic stratigraphy in Wyoming, Loomis, 2.
- La Plata folio, Cross and Spencer, 1.
- Morrison formation, Lee (W. T.), 1.
- New and little known fossil vertebrates, Hatcher, 3.
- New species of Baëna from Laramie beds, Hay, 2.
- Oil of the northern Rocky Mountains, Willis, 4.
- Paleontology of the Boulder area, Henderson (J.), 3.
- Prospecting for oil, Lakes, 36.
- Rocky Mountain coal fields, Storrs (L. S.), 1.
- Sabal rigida, Hatcher, 5.
- Spanish Peaks folio, Hills, 1.
- Stratigraphic position of Judith River beds, Hatcher and Stanton, 1.
- Stratigraphy and structure, Lewis and Livingston ranges, Montana, Willis, 6.
- Stratigraphy of the Black Hills, Bighorn Mountains, and Rocky Mountain front range, Darton, 16.
- Sundance folio, Darton, 26.

Southwestern region.

- Asphalt deposits of Pike County, Ark., Hayes (C. W.), 4.

Cretaceous—Continued.

Southwestern region—Continued.

- Atoka folio, Taff, 3.
- Austin chalk underlying Waco, Tex., Prather, 2.
- Austin folio, Hill and Vaughan, 1.
- Cinnabar deposits of Big Bend province, Hill (R. T.), 8.
- Chalk of southwestern Arkansas, Taff, 5.
- Cretaceous and later rocks of Presidio and Brewster counties, Dumble, 12.
- Fossils of the Texas Cretaceous, Prather, 1.
- Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
- Geologie und Petrographie der Apache Mountains, Osann, 1.
- Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
- Geology and water resources of Oklahoma, Gould, 14.
- Geology of Arbuckle and Wichita Mountains, Taff, 13.
- Geology of Oklahoma, Gould, 9.
- Geology of Shafter silver-mine district, Udden (Johan A.), 11.
- Geology of the Cerrillos Hills, Johnson (D. W.), 4, 5.
- Geology of the Glass Mountains, White (M.), 1.
- Geology of the Jemez-Albuquerque region, Reagan, 1.
- Jurassic horizon around the southern end of the Rocky Mountains, Keyes, 51.
- Kreide-Ammoniten von Texas, Lasswitz, 1.
- Mollusca of Buda limestone, Shattuck, 8.
- Oil and gas fields of western interior and Gulf coast, Adams (G. I.), 2.
- Stratigraphic notes on Malone Mountain, Stanton, 7.
- Stratigraphic sequence in trans-Pecos Texas, Richardson (G. B.), 5.
- Tishomingo folio, Taff, 6.
- Unconformity of the Cretaceous on older rocks in central New Mexico, Keyes, 44.

West Indies.

- Geological reconnaissance of Cuba, Hayes, Vaughan, and Spencer, 1.

General.

- Geographical distribution of freshwater decapods, Ortmann, 8.
- Recent literature on Laramie formation, Hay, 7.
- Recent zoopaleontology, Osborn, 20.

Delaware.

- Clays of the United States, Ries, 6.
- Matawan formation, Clark (W. B.), 5.
- Underground waters of Delaware, Darton, 22.

Devonian.
Alaska.
Geological section of Rocky Mountains in northern Alaska, Schrader, 1.
Gold placers of Fortymile, Birch Creek, and Fairbanks regions, Prindle, 2.
Preliminary report on the Ketchikan mining district, Brooks, 4.
Reconnaissance in Alaska, Schrader, 3.
Appalachian region.
Catskill rocks in northern Pennsylvania, Fuller (M. L.), 4.
Contributions to Devonian paleontology, Williams and Kindle, 1.
Devonian era in Ohio basin, Claypole, 5.
Devonic and Ontaric formations of Maryland, Schuchert, 7.
Ebensburg folio, Pennsylvania, Butts, 7.
Elkland-Tioga folio, Fuller and Alden, 2.
Gaines folio, Fuller and Alden, 1.
Gaines oil field of northern Pennsylvania, Fuller (M. L.), 3.
Geology of Garrett County, Martin (G. C.), 1.
Latrobe folio, Campbell (M. R.), 18.
Masontown-Uniontown folio, Campbell (M. R.), 6.
Maynardville folio, Keith, 1.
Paleozoic Appalachia, Willis, 1.
Paleozoic faunas, Weller, 6.
Paleozoic formations of Allegany County, Md., Prosser, 3.
Rocks of Green Pond Mountain region, Kümmel and Weller, 2.
Rome folio, Hayes (C. W.), 5.
Romney formation of Maryland, Prosser, 12.
Shifting of faunas, Williams (H. S.), 4.
Canada.
Artesian wells of Montreal, Adams and LeRoy, 1.
Charlotte County, Ells (R. W.), 17.
Corniferous exposure in Anderdon, Nattress, 1.
Description of tracks from mudstones of Knoydart formation, Ami, 28.
Devonian fauna of Kwataboahegan, Parks, 5.
Devonian of Canadian provinces, Ells (R. W.), 4.
Devonian of the Acadian provinces, Matthew (G. F.), 3.
Economic resources of Moose River basin, Bell (J. M.), 2.
Fossiliferous rocks of southwest Ontario, Parks, 4.
Genus Panenka, with description of a species from Devonian rocks of Ontario, Whiteaves, 4.
Geological formations about Montreal, Ami and Adams, 1.
Geological history of Gaspereau Valley, Haycock, 1.

Devonian—Continued.
Canada—Continued.
Geological record of Rocky Mountain region, Dawson, 2.
Geologie von Canada, Haas, 2.
Geology of Charlotte County, Ells (R. W.), 24.
Geology of St. Helens Island, Nolan and Dixon, 1.
Geology of the principal cities in eastern Canada, Ami, 1.
Hamilton group of Thedford, Ontario, Shimer and Grabau, 1.
Knoydart formation of Nova Scotia, Ami, 8.
New geological formation in the Devonian, Ami, 4.
Nictaux iron field, Weatherbe, 1.
Percé: Sketch of its geology, Clarke (J. M.), 26.
Petroleum and natural gas [in Ontario], Corkill, 2.
Problems in New Brunswick geology, Ells (R. W.), 25.
Silurian and Devonian formations of eastern Canada, Ami, 12.
Stratigraphical note, Ami, 10.
Stratigraphy versus paleontology in Nova Scotia, Matthew (G. F.), 15.
Synopsis of geology of Canada, Ami, 2.
Great Basin region.
Bisbee folio, Ransome, 14.
Clifton folio, Lindgren, 28.
Copper deposits of Clifton-Morenci district, Lindgren, 29
Evidences of shallow seas in Paleozoic time, Blake (W. P.), 2.
Geology and copper deposits of Bisbee, Ransome, 10.
Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
Geology of Arizona, Blake (W. P.), 1.
Geology of Globe copper district, Ransome, 6.
Geology of Nevada, Spurr, 6.
Notes on geology of southeastern Arizona, Dumble, 7.
Paleozoic rocks of Great Basin region, Weeks, 9.
Stratigraphy of Uinta Mountains, Berkey, 8.
Great Lakes region.
Chicago folio, Alden, 1.
Geologic section in Alpena and Presque Isle counties, Grabau, 2.
Hamilton formation at Milwaukee, Teller, 1.
Paleozoic coral reefs, Grabau, 10.
Stratigraphy of Traverse group of Michigan, Grabau, 5.
Subsurface geology of Alcona County, Mich., Lane, 7.
Traverse group of Michigan, Grabau, 14.
Greenland.
Bidrag till nordöstra Grönlands geologi, Nathorst, 1.

Devonian—Continued.

Mississippi Valley region.

- Devonian fossils and stratigraphy of Indiana, Keyes, 1.
- Devonian hiatus in continental interior, Keyes, 28.
- Devonian interval in Missouri, Keyes, 26.
- Fayetteville folio, Adams and Ulrich, 1.
- Fluorspar deposits of southern Illinois, Bain, 19.
- Formations of northern Arkansas, Ulrich, 5.
- Geological formations of Iowa, Calvin, 4.
- Geological section across northern Illinois, Udden (Johan A.), 1.
- Geology of Benton County, Iowa, Savage, 7.
- Geology of Cedar County, Iowa, Norton, 1.
- Geology of Chickasaw County, Iowa, Calvin, 11.
- Geology of clays, Beyer and Williams, 2.
- Geology of Fayette County, Iowa, Savage, 8.
- Geology of Howard County, Iowa, Calvin, 10.
- Geology of Minnesota, Hall (C. W.), 7.
- Geology of Missouri, Gallaher, 1.
- Geology of Mitchell County, Iowa, Calvin, 12.
- Geology of Moniteau County, Mo., Van Horn, 1.
- Geology of Tama County, Iowa, Savage, 3.
- Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich, 8.
- Physiography and geology of the Ozark region, Adams (G. I.), 3.
- Silver Creek hydraulic limestone, Siebenthal, 2.
- Tahlequah folio, Taff, 17.
- Water resources in Arkansas, Purdue, 9.
- Zinc and lead deposits of Arkansas, Adams (G. I.), 15.

New England and New York.

- Classification of rocks of Watkins Glen quadrangle, Williams (H. S.), 7.
- Concretions in the Chemung of New York, Kindle, 5.
- Correlation of geological faunas, Williams (H. S.), 5.
- Devonic and Carbonic formations of southwestern New York, Glenn, 1.
- Drift fossils, Hollick, 8.
- Dwarf fauna of Tully limestone, Loomis, 4.
- Fauna of Agoniatite limestone of Onondaga County, N. Y., Wilson (J. D.), 1.
- Fauna of Stafford limestone, Talbot, 1.
- Folds on the border of the Appalachian system, Kindle, 4.
- Geologic map of the Tully quadrangle, Clarke and Luther, 8.

Devonian—Continued.

New England and New York—Continued.

- Geology and paleontology of Niagara Falls, Grabau, 1.
- Geology of eastern New York, Prosser, 11.
- Geology of Littleton, Hitchcock (C. H.), 10.
- Geology of Onondaga County, N. Y., Schneider, 1.
- Geology of Perry basin, Smith and White, 1.
- Geology of Watkins and Elmira quadrangles, Clarke and Luther, 2.
- Hamilton fossils from Bethany, N. Y., Monroe, 1.
- Helderberg invasion of the Manlius, Harris, 7.
- Lime and cement industries of New York, Ries, 4.
- Limestones interbedded with shales of Marcellus stage, Clarke (J. M.), 2.
- Limonite beds at Cornwall, Hartnagel, 3.
- Map of Canandaigua and Naples quadrangles, Clarke and Luther, 1.
- Marcellus limestone, Wood (Elvira), 1.
- Naples fauna in western New York, Clarke (J. M.), 19.
- Olean rock section, Clarke (J. M.), 16.
- Origin of faunas of Marcellus limestones of New York, Clarke (J. M.), 13.
- Origin of limestone faunas of the Marcellus shales of New York, Clarke (J. M.), 21.
- Oriskany sandstone, Wheelock, 1.
- Paleozoic coral reefs, Grabau, 10.
- Quarry industry in southeastern New York, Eckel, 6.
- Report of State paleontologist, Clarke (J. M.), 5, 11.
- Rocks of Rondout, Van Ingen and Clark, 1.
- Shifting of faunas, Williams (H. S.), 4.
- Siluric and Devonic faunas of Trilobite Mountain, Shimer, 5.
- Stratigraphic value of Portage sandstones, Luther, 1.
- Stratigraphy of Becraft Mountain, Grabau, 9.
- Stratigraphy of Portage formation, Luther, 2.

Ohio Valley region.

- Berea Grit oil sand in Cadiz quadrangle, Griswold, 1.
- Bearing of Clinton and Osgood formations on age of Cincinnati anticline, Foerste, 4.
- Cincinnati anticline in southern Kentucky, Foerste, 3.
- Columbia folio, Hayes and Ulrich, 1.
- Contributions to Devonian paleontology, Williams and Kindle, 1.
- Delaware limestone, Prosser, 13.
- Devonian era in Ohio basin, Claypole, 5.

Devonian—Continued.
- *Ohio Valley region*—Continued.
  - Field geology in Ohio State University, Mead (C. S.), 1.
  - New fossil plants from Carboniferous and Devonian, Herzer, 4.
  - New fossils from Corniferous, Hamilton, and Medina shales, Herzer, 5.
  - New points on the fin attachment of Dinichthys and Cladodus, Clark (W.), 1.
  - Nomenclature of Ohio geological formations, Prosser, 10, 15.
  - Ohio natural-gas fields, Bownocker, 4.
  - Oil and gas producing rocks of Ohio, Bownocker 3,
  - Petroleum and natural gas in Ohio, Bownocker, 5.
  - Section across southern Indiana, Newsom, 3.
  - Silurian and Devonian limestones of western Tennessee, Foerste, 7.
  - Structure of Dinichthys, Wright (A. A.), 1.
  - Thickness of Columbus limestone, Griggs, 1.
  - Topography and geology of Indiana, Hopkins (T. C.), 11.
- *Pacific coast region.*
  - Klamath Mountain section, Diller, 12.
- *Rocky Mountain region.*
  - Carboniferous formations and faunas of Colorado, Girty, 3.
  - Devonian formation in Colorado, Cross (W.), 5.
  - Geology and ore deposits of Elkhorn mining district, Montana, Weed, 5.
  - Geology of the Needle Mountains quadrangle, Cross and Howe, 3.
  - Geology of Rico quadrangle, Cross (W.), 7.
  - Geology of southwestern Montana, Douglass, 10.
  - Silverton folio, Cross and Howe, 1.
- *Southwestern region.*
  - Geology of Arbuckle and Wichita Mountains, Taff, 13.
  - Geology of Fort Apache region, Reagan, 3.
  - Tishomingo folio, Taff, 6.
  - Texas petroleum, Phillips (W. B.), 1.
- *General.*
  - Faunal provinces of middle Devonic of America, Schuchert, 5.
  - Oberdevon Europas und Nordamerikas, Hartzell, 1.
  - Physical characters and history of some New York formations, Grabau, 17.
  - Siluro-Devonian boundary question, Williams (H. S.), 2.

District of Columbia.
- Clays of the United States, Ries, 6.
- Underground waters of the District of Columbia, Darton and Fuller, 2.
- Washington folio, Darton and Keith, 1.

Dynamic and structural geology (geographic divisions).
- *Alaska.*
  - Alaska glaciers and glaciation, Gilbert, 13.
  - Pacific coast glaciers, Muir, 1.
  - Recent changes of level in Alaska, Tarr and Martin, 1.
  - Reconnaissance of the Cape Nome and adjacent gold fields of the Seward Peninsula, Brooks and others, 1.
- *Appalachian region.*
  - Anticlinal folds near Meadville, Pa., Smallwood and Hopkins, 1.
  - Cockeysville marble, Mathews and Miller, 1.
  - Folded faults in southern Appalachian, Keith, 2, 10.
  - Geographic development of northern Pennsylvania and southern New York, Campbell (M. R.), 9.
  - Geologic relations of the iron ores in the Cartersville district, Hayes (C. W.), 1.
  - Geology of Rand Hill, Cushing, 2.
  - Geology of the Tallulah gorge, Jones (S. P.), 1.
  - Lineaments of the Atlantic border region, Hobbs, 22.
  - Maynardville folio, Keith, 1.
  - Misnamed Indiana anticline, Richardson (G. B.), 1.
  - Paleozoic Appalachia, Willis, 1.
  - Paleozoic limestones of Kittatinny Valley, Kümmel and Weller 1.
  - Recent work in the bituminous coal field of Pennsylvania, Campbell (M. R.), 11.
  - Structure of the Piedmont Plateau, Mathews, 5.
- *Atlantic coast region.*
  - Bathymetrical features of the north Polar seas, Nansen, 2.
  - Submarine canyon of Hudson River, Spencer (J. W.), 12.
  - Washington folio, Darton and Keith, 1.
- *Canada.*
  - Composition of Canadian limestone, Donald, 2.
  - Cuspate forelands, Wilson (A. W. G.), 8.
  - Eboulement à Saint Luc de Vincennes, Laflamme, 2.
  - Earthquakes in New Brunswick, Kain, 1.
  - Frank disaster, Fernie, 1.
  - Frank disaster, Green, 1.
  - Geology of the Moose River gold district, Woodman, 4.
  - Geology of the Paleozoic basin, Ells (R. W.), 1.
  - Frank disaster, Smith (F. B.), 2.
  - Landslide at Frank, Alberta, McConnell and Brock, 1.
  - Landslide on the Lièvre River, Barlow, 9.

- **Dynamic and structural geology** (geographic divisions)—Continued.
  - *Canada*—Continued.
    - Landslide on Lièvre River, Ells (R. W.), 16.
    - Modifications remarquables causées à l'embouchure de la Rivière Ste. Anne, Laflamme, 1.
    - Natural history and physiography of New Brunswick, Ganong, 3.
    - Physiography of Acadia, Daly, 1.
    - Raised shore lines of St. Lawrence Valley and Great Lakes, Chalmers, 6.
    - Recent folds in Lorraine shales, Wilson (A. W. G.), 4.
    - Rock basins of Helen mine, Michipicoten, Canada, Coleman, 11.
    - Rock movements in the Laurentian and Huronian areas, Mills (S. D.), 1.
    - Rock-slide at Alberta, Brewer (W. M.), 10.
    - Rock-slide at Frank, Haanel, 1.
    - Seismology in Canada, Stupart, 1.
    - Shore lines and landslips of St. Lawrence Valley, Chalmers, 1.
    - Was Mount Royal an active volcano? Buchan, 1.
  - *Central America.*
    - Additions to the list of Nicaragua volcanic eruptions in historic time, Crawford, 4.
    - Análisis de cenizas del volcán de Santa María, Villaseñor, 1.
    - Ausbruch des Vulkans St. Maria, Sapper, 5, 6.
    - Cenizas del volcan de Santa María, Ordoñez, 13.
    - Earthquake and volcanic eruption in Guatemala, Eisen, 1.
    - Earthquakes in Nicaragua, Crawford, 1.
    - Erdbeben in Guatemala, Sapper, 4.
    - Flutschwankungen und die vulkanischen Ereignisse in Mittelamerika, Krebs, 1.
    - List of most important volcanic eruptions and earthquakes in western Nicaragua within historic time, Crawford, 3.
    - Recent earthquakes, Rockstroh, 1.
    - Südlichsten Vulkane Mittel-Amerikas, Sapper, 2.
    - Volcanoes and earthquakes in Nicaragua, Crawford, 2.
    - Volcanic eruptions in Guatemala, Winterton, 1.
    - Vulkan Izalco, Sapper, 7.
    - Vulkanausbruch in Mittelamerika, Sapper, 23.
    - Vulcanischen Ereignisse in Mittel amerika, Sapper, 20, 21.
  - *Great Basin region.*
    - Basin-range structure in the Death Valley region, Campbell (M. R.), 13.
    - Basin-range structure of the Humboldt region, Louderback, 4.
    - Colossal bridges of Utah, Dyar, 1.

- **Dynamic and structural geology** (geographic divisions)—Continued.
  - *Great Basin region*—Continued.
    - Colossal bridges of Utah, Winchell (N. H.), 22.
    - Current notes on physiography, Davis (W. M.), 17.
    - Fault slip in Ogden Canyon, Talmage, 1.
    - Faulting at Tonopah, Spurr, 24.
    - Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
    - Geology and vein phenomena of Arizona, Comstock (T. B.), 1.
    - Geology of the Tonopah mining district, Spurr, 29.
    - Globe folio, Ransome, 13.
    - Grand Canyon of the Colorado, Davis (W. M.), 1.
    - Historical geology of Esmeralda County, Nev., Turner, 5.
    - Hurricane fault in southwestern Utah, Huntington and Goldthwait, 1.
    - Hurricane fault in the Toquerville district, Huntington and Goldthwait, 2.
    - Joint veins, Gilbert, 8.
    - Landslides of Echo and Vermilion cliffs, Dodge, 1.
    - Mountain ranges of Great Basin, Davis (W. M.), 46.
    - Origin and structure of the Basin ranges, Spurr, 1.
    - Origin of Basin ranges, Gilbert, 11.
    - Plateau province of Utah and Arizona, Davis (W. M.), 45.
    - Stratigraphy of Uinta Mountains, Berkey, 8.
    - Structure and genesis of the Comstock lode, Reid (J. A.), 3.
    - Structures of Basin ranges, Keyes, 45.
    - Wasatch, Canyon, and House ranges, Davis (W. M.), 59.
  - *Great Lakes region.*
    - Beach structure in Medina sandstone, Fairchild, 1.
    - Delta of St. Clair River, Cole (L. J.), 1.
    - Ellipsoidal structure in pre-Cambrian rocks of Lake Superior region, Clements, 4.
    - Evidences of caves of Put-in-Bay on question of land tilting, Fuller (M. L.), 16.
    - Geothermal gradient in Michigan, Lane, 13, 16, 27.
    - Hydration caves, Kraus, 7.
    - Junction of Lake Superior sandstone and Keeweenawan traps, Grant (U. S.), 2.
    - Wave cutting on west shore of Lake Huron, Gordon (C. H.), 3.
    - Wisconsin shore of Lake Superior, Collie, 1.
  - *Great Plains region.*
    - Concretions of Ottawa County, Bell (W. T.), 1.

Dynamic and structural geology (geographic divisions)—Continued.
  Great Plains region—Continued.
    Erosion on the Great Plains, Upham, 25.
    Geology of the Black Hills, Jaggar, 5.
    Mountain growths of Great Plains, Willis, 10.
    Sand crystals and their relation to concretionary formations, Barbour (E. H.), 6.
  Greenland.
    Samples of the sea floor along the coast of east Greenland, Böggild, 3.
  Gulf region.
    Recent elevation of Gulf coast, Vaughan, 11.
  Hawaiian Islands.
    Brevity of tuff cone eruptions, Bishop (S. E.), 1.
    Characteristics of Kau, Emerson (J. S.), 1.
    Eruption of Mauna Loa, Wood (Edgar), 1.
    Kilauea again active, Hitchcock (C. H.), 9.
    Mohokea caldera on Hawaii, Hitchcock (C. H.), 3.
  Mexico.
    Area cubierta por la ceniza del volcan de Santa Maria, Böse, 6.
    Condiciones tectónicas de la Republica Mexicana, Aguilera, 2.
    Éruptions du volcan de Colima, Ordoñez, 10.
    Eruptions of Colima, Arreola, 1.
    Geographic and geologic features and their relation to the mineral products of Mexico, Hill (R. T.), 4.
    Geology of western Mexico, Farrington, 13.
    Latest eruption of Colima volcano, Ishikawa, 1.
    Origen de los temblores de Zanatepec, Böse, 5.
    Profil durch den Ostabfall der Sierra Madre Oriental, Böse, 2.
    Regiones de temblores en México, Böse, 4.
    Temblor en Guerrero, Böse and Angermann, 1.
    Volcan de Tacana, Böse, 3.
    Volcanes de Zacapu, Ordoñez, 9.
    Xinantacatl ou volcan Nevado de Toluca, Ordoñez, 7.
  Mississippi Valley region.
    Age of the Kansan drift sheet, Hershey, 4.
    Corrading action of river water during floods, Morscher, 1.
    Devonian interval in Missouri, Keyes, 26.
    Evidence of local subsidence, Campbell (J. T.), 1.
    Geologic relations of the human relics of Lansing, Kans., Chamberlin (T. C.), 5.

Dynamic and structural geology (geographic divisions)—Continued.
  Mississippi Valley region—Continued.
    Geology of Miller County, Ball and Smith, 1.
    Kansas River flood, Haworth, 5.
    King-Ritter fault, Ruhl, 1.
    Loess with horizontal shearing planes, Udden, 4.
    New Madrid earthquake, Broadhead, 3.
    New Madrid earthquake, McGee, 1.
    New Madrid earthquake, Shepard, 3.
    Observations at Pegmatite Hill, Ruhl, 2.
    Pre-Glacial drainage in southwestern Ohio, Miller (A. M.), 1.
    River beds and bluffs, Heiney, 1.
    Smoking bluffs of the Missouri River region, Powers, 1.
    Terrace formation in Turkey River Valley, Finch (G. E.), 1.
  New England and New York.
    Alnoite dikes in East Canada Creek, Schneider, 10.
    Ames Knob, North Haven, Me., Willis, 12.
    Differential movement along New England coast, Curtis, 4.
    Erosion by flying sand, Julien, 2.
    Eruptive dikes near Ithaca, Schneider, 7.
    Folds on the border of the Appalachian system, Kindle, 4.
    Geologic features within the 8,000-acre grant, Sheldon and Sheldon, 1.
    Geological history of Charles River, Mass., Clapp, 1.
    Geological structure of southwestern New England, Hobbs, 14.
    Geology of Ascutney Mountain, Daly, 7.
    Geology of the serpentines of central New York, Schneider, 6.
    Glacial phenomena in Adirondacks and Champlain Valley, Ogilvie, 1.
    Landslides of Mount Greylock and Briggsville, Mass., Cleland, 1.
    Marcellus fault, Schneider, 3.
    Micaceous cross-banding of strata, Woodworth, 1.
    Nantucket shore lines, Gulliver, 3.
    New dike at Ithaca, Barnett, 1.
    Newark system of the Pomperaug Valley, Hobbs, 2.
    Origin of channels surrounding Manhattan Island, Hobbs, 24.
    Overthrust faults in central New York, Wheelock, 2.
    Overthrust faults in New York, Schneider, 9.
    Rate of lateral erosion at Niagara, Wright (G. F.), 3.
    Representatives of pre-Wisconsin till, Fuller (M. L.), 1.
    River terraces of New England, Davis (W. M.), 3.
    River system of Connecticut, Hobbs, 8.

Dynamic and structural geology (geographic divisions)—Continued.

New England and New York—Continued.

- Rocks of Rondout, Van Ingen and Clark, 1.
- Sand plains of Glacial lake Sudbury, Goldthwait, 1.
- Still rivers of western Connecticut, Hobbs, 6.
- Taconic physiography, Dale, 9.
- Tectonic geography of southwestern New England and southeastern New York, Hobbs, 23.
- Terraces of Westfield River, Mass., Davis (W. M.), 28.
- Undulations of the Lockport limestone, Gilbert, 24.

Ohio Valley region.

- Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich and Smith, 1.
- Natural gas explosion near Waldron, Ind., Newsom, 2.

Pacific coast region.

- Anticlinal mountain ridges in central Washington, Smith (G. O.), 10.
- Asymmetry of crest lines in the high Sierra of California, Gilbert, 19.
- Berkeley Hills, Lawson and Palache, 1.
- Clastic dikes, Newsom, 4.
- Drainage features of California, Lawson (A. C.), 2.
- Ellensburg folio, Smith (G. O.), 7.
- Erosion on the Pacific coast, Holder, 2.
- Fault-system, Gunther, 2.
- Geological section of the coast ranges, Osmont, 1.
- Geology of Mineral King, Knopf and Thelen, 1.
- Geology of Salinas Valley, Nutter, 1.
- Geomorphogeny of Klamath Mountains, Diller, 3.
- Glacier of Mount Lyell, Lee (W. T.), 10.
- Marine Pliocene and Pleistocene stratigraphy of coast of southern California, Arnold and Arnold, 1.
- Origin of transverse mountain valleys, Le Conte, 1.
- Post-Tertiary elevation of the Sierra Nevada, Turner, 10.
- Profile of maturity in Alpine glacial erosion, Johnson (W. D.), 3.
- Significance of Cretaceous outliers in Klamath region, Hershey, 11.
- Significance of term Sierran, Hershey, 8.
- Structure of Klamath Mountains, Hershey, 17.
- Subsidence of Santa Catalina, Ritter (W. E.), 1.

Panama.

- Geology of the Isthmus of Panama, Hershey, 5.

Philippine Islands.

- Volcanoes and seismic centers of the Philippine Archipelago, Maso, 1.

Dynamic and structural geology (geographic divisions)—Continued.

Rocky Mountain region.

- Boston Mountain physiography, Hershey, 12.
- Complicated fault system, Bacorn, 1.
- Cripple Creek, Lakes, 2.
- Cripple Creek volcano, Rickard (T. A.), 1.
- Effect of cliff erosion on form of contact surfaces, Fenneman, 6.
- Erosion on the Great Plains and on the Cordilleran Mountain belt, Upham, 25.
- Examples of Colorado faults, Lakes, 95.
- Fault-planes in the Dakota fire-clay beds at Golden, Patton, 3.
- Faults in the Dakota formation at Golden, Patton, 4.
- Fracture valley system, Iddings, 2.
- Geology of Castle Rock region, Lee (W. T.), 2.
- Geology of Black Hills, Darton, 1.
- Geology of Silverton quadrangle, Cross, 1.
- Geology of the Boulder district, Fenneman, 10.
- Glacial erosion in the Sawatch Range, Davis (W. M.), 54.
- Glaciation of the Sawatch Range, Davis (W. M.), 58.
- Hanging valleys of Georgetown, Crosby, 6.
- Hydrographic history of South Dakota, Todd (J. E.), 4.
- Laccoliths of the Black Hills, Jaggar, 1.
- La Plata folio, Cross and Spencer, 1.
- Oil of the northern Rocky Mountains, Willis, 4.
- Overturns in the Denver basins, Henderson (J.), 1.
- Recent earth movements, Lakes, 42.
- Spanish Peaks folio, Hills, 1.
- Stratigraphy and structure, Lewis and Livingston ranges, Mont., Willis, 6.
- Structure of Front Range, northern Rocky Mountains, Mont., Willis, 7.
- Volcanoes, Lakes, 34.

Southwestern region.

- Block Mountains in New Mexico, Johnson (D. W.), 7.
- Block Mountains in New Mexico, Keyes, 37.
- Caliche of southern Arizona, Blake (W. P.), 4.
- Coast prairie of Texas, Hill (R. T.), 1.
- Colgate folio, Taff, 2.
- Depositional measure of unconformity, Keyes, 1.
- Earthquakes in New Mexico, Bagg, 4.
- Laws of formation of New Mexico mountain ranges, Herrick (C. L.), 4.
- Plication in the rocks of Cananea, Blake (W. P.), 17.
- Miniature overthrust fault and anticline, Purdue, 2.

Dynamic and structural geology (geographic divisions)—Continued.

Southwestern region—Continued.
- Peneplains of the Ozark highland, Hershey, 1.
- Structures of Basin ranges, Keyes, 45.
- Topography and geology of New Mexico, Jewett, 1.
- Valleys of solution in northern Arkansas, Purdue, 1.

West Indies.
- Activity of Mont Pelée, Heilprin, 4.
- Antillean volcanoes, McGee, 3.
- Ausbruchsperiode des Mont Pelé, Stübel, 2.
- Bibliography of West Indian eruptions, Hovey (E. O.), 32.
- Composition des gaz des fumerolles du Mont Pelée, Gautier, 1.
- Der Vulkan, Haas, 1.
- Die vulcanischen Kleinen Antillen und die Ausbrüche der Jahre, 1902 und 1903, Sapper, 19.
- Erosion phenomena in St. Vincent and Martinique, Hovey (E. O.), 35.
- Erosion phenomena on islands of St. Vincent and Martinique, Hovey (E. O.), 30.
- Erosion phenomena on Mont Pelée and Soufrière, Hovey (E. O.), 24.
- Éruption de la Martinique, Lacroix and others, 1.
- Éruption de la Montagne Pelée, Lacroix, 13.
- Éruption de la Montagne Pelée, Michel-Lévy, 1.
- Éruption du volcan de Saint-Vincent, Lacroix, 15.
- Eruption of Pelée, Jaggar, 8.
- Eruption of Mount Pelée, Jaggar, 6.
- Éruption volcanique à la Martinique, Thierry, 1.
- Éruptions de Saint-Vincent, Lacroix, 19.
- Éruptions des nuages de la Montagne Pelée, Lacroix, 12.
- Eruptions of 1902 of La Soufrière, St. Vincent, and Mont Pelée, Martinique, Hovey (E. O.), 9.
- Eruptions of La Soufrière, St. Vincent, in May, 1902, Hovey (E. O.), 10.
- Eruptions of Mont Pelé and the Soufrière, Hovey (E. O.), 33.
- Eruptions of Soufrière, Anderson and Flett, 2.
- Éruptions volcaniques de la Martinique, Lacroix, 11.
- État actuel du volcan de la Montagne Pelée, Lacroix, 8.
- État actuel de la Soufrière de la Guadeloupe, Lacroix, 14.
- Field notes of a geologist in Martinique and St. Vincent, Jaggar, 2.
- Gaz des fumerolles du Mont Pelée, Moissan, 1
- Geological and physical development of Antigua, Spencer (J. W.), 1.

Dynamic and structural geology (geographic divisions—Continued.

West Indies—Continued
- Geological and physical development of Augilla, St. Martin, St. Bartholomew, and Sombrero, Spencer (J. W.), 3.
- Geological and physical development of Guadaloupe, Spencer (J. W.), 2.
- Geological and physical development of the St. Christopher chain and Saba banks, Spencer (J. W.), 4.
- Geological features of Azores, Howarth, 1.
- Geological relationship of volcanoes of West Indies, Spencer (J. W.), 8.
- Grande Soufrière of Guadeloupe, Hovey (E. O.), 31.
- Grand Soufrière of St. Vincent, Hovey (E. O.), 28.
- Inner cone of Mont Pelée, Hovey (E. O.), 23.
- Krater der Soufrière von St. Vincent, Sapper, 16.
- La Montagne Pelèe et ses éruptions, Lacroix, 20.
- Martinique, Sapper, 15.
- Martinique and St. Vincent; preliminary report upon the eruptions of 1902, Hovey (E. O.), 12.
- Martinique and St. Vincent revisited, Hovey (E. O.), 18.
- Martinique und St Vincent, Stübel, 1.
- Martinique und sein Vulkanismus, Deckert, 2.
- Massive-solid volcanic eruptions, Russell, 13.
- Mechanism of Mont Pelé spine, Gilbert, 16.
- Mission de la Martinique, Lacroix, 4, 16.
- Mont Pelé, Hovey (E. O.), 20.
- Mont Pelé, Hovey (E. O.), 26.
- Mont Pelée, Jaggar, 4.
- Mont Pelée and tragedy of West Indies, Heilprin, 3.
- Mont Pelée—the eruptions of August 24 and 30, 902, Heilprin, 7.
- Nature of Pelé tower Heilprin, 8.
- Nature of phenomena of eruption of Mont Pelée, Divers, 1.
- New cone and obelisk of Mont Pelé, Hovey (E. O.), 29.
- New cone of Mont Pelé, Hovey (E. O.), 17.
- Next eruption of Pelée, Jaggar, 3.
- Obelisk of Mont Pelée, Heilprin, 6.
- Obelisk of Mont Pelé, Hovey (E. O.), 21.
- Obelisk of Montagne Pelée, Heilprin, 5, 6.
- Observations sur les éruptions volcaniques, Lacroix, 7.
- Peculiar character of eruption of Mont Pelée, Verrill, 1.
- Pelé and the evolution of the Windward Archipelago, Hill (R. T.), 16.

Dynamic and structural geology (geographic divisions)—Continued.

- *West Indies*—Continued.
  - Pelé obelisk, Russell, 12, 22.
  - Pelée's obelisk, Argall (P. H.), 1.
  - Présence de l'argon dans les gaz des fumerolles de la Guadeloupe, Moissan, 2.
  - Recent eruptions of Mont Pelée, Nicholls, 1.
  - Recent tuffs of the Soufrière, Howe (E.), 2.
  - Recent volcanic eruptions, Anderson (T.), 1.
  - Recent volcanic eruptions in West Indies, Milne, 1.
  - Recent volcanic eruptions in West Indies, Russell, 3.
  - St. Vincent, Sapper, 18.
  - St. Vincent, eruptions of 1902, Hovey (E. O.), 36.
  - Secondary phenomena of West Indian volcanic eruptions, Curtis, 1.
  - Soufrière of St. Vincent, Hovey (E. O.), 27.
  - Spine on Mont Pelée, Jaggar, 7.
  - Tower of Pelée, Heilprin, 9, 10.
  - Visit to Martinique and St. Vincent after the great eruptions of May and June, 1902, Hovey (E. O.), 11.
  - Volcanic action and the West Indian eruptions of 1902, Lobley, 1.
  - Volcanic disturbances in West Indies, Hill (R. T.), 6.
  - Volcanic eruptions in the West Indies, Anderson (T.), 2.
  - Volcanic eruptions in the West Indies, Burns, 1.
  - Volcanic eruptions on Martinique and St. Vincent, Russell, 4.
  - Volcanoes of Caribbean Islands, Hovey (E. O.), 22.
  - Volcanoes of Martinique, Guadeloupe, and Saba, Hovey (E. O.), 44.
  - Volcanoes of St. Vincent, St. Kitts, and Statia, Hovey (E. O.), 45.
  - Vulcangebiete Mittelamerikas und Westindiens, Sapper, 24.
  - Vulkane Pelé, Krakatau, Etna, Vesuv, Kewitsch, 1.
  - Vulcanische Asche vom Vulcan Soufrière, Klein, 1.
  - Vulkanischen Ausbrüche auf den Kleinen Antillen, Hoernes, 1.
  - Vulkanischen Ereignisse in Westindien, Bergeat, 1.
  - Vulkanske udbrud i Vestindien, Kolderup, 3.
  - West Indian eruptions of 1902, Curtis, 2.
  - West Indian volcanic eruptions, Milne, 2.

Dynamic and structural geology (divisions by subject matter).

- *Caves.*
  - Cave regions of the Ozarks and Black Hills, Owen, 4.

Dynamic and structural geology (divisions by subject matter)—Continued.

- *Caves*—Continued.
  - Colossal cavern, Kentucky, Hovey (H. C.), 2.
  - Crystal cave, South Dakota, Hovey (E. O.), 34.
  - Geology of Jacobs Cavern, Gould, 12.
  - Grottes des États-unis d'Amerique, Le Couppey de la Forrest, 1.
  - Hydration caves, Kraus, 7.
  - New Brunswick caves, Bailey (L. W.), 9.
  - Note on Oliver's cave, Matthew (G. F.), 26.
  - Origin of caves of Put-in-Bay, Kraus, 6.
  - Scientific exploration of caves, Martel, 1.
- *Concretions.*
  - Concretions from Connecticut Valley, Sheldon, 1.
  - Concretions in the Chemung of New York, Kindle, 5.
  - Concretions of the Pierre shale, Barbour (C. A.), 2.
- *Deformation.*
  - Geographic development of northern Pennsylvania and southern New York, Campbell (M. R.), 9.
  - Niagara domes of northern Indiana, Kindle, 3.
  - Physiography and deformation of the Wenatchee-Chelan district, Willis, 11.
- *Earthquakes.*
  - Audubon's account of the New Madrid earthquake, Fuller (M. L.), 28.
  - Earthquake and volcanic eruption in Guatemala, Eisen, 1.
  - Earthquake records from Guam, Abbe, 4.
  - Earthquakes, Dutton, 1.
  - Earthquakes in New Mexico, Bagg, 4.
  - Earthquakes in Nicaragua, Crawford, 1.
  - Earthquakes in the New Madrid area, Fuller (M. L.), 41.
  - Erdbeben in Guatemala, Sapper, 4.
  - Erdbebenherde und Schüttergebiete von Nord-Amerika, Deckert, 1.
  - Les États-Unis sismiques, Montessus de Ballore, 1.
  - List of the most important volcanic eruptions and earthquakes in western Nicaragua within historic time, Crawford, 3.
  - New Madrid earthquake, Broadhead, 3.
  - New Madrid earthquake, McGee, 1.
  - New Madrid earthquake, Shepard, 3.
  - Origen de los temblores de Zanatepec, Böse, 5.
  - Recent changes of level in Alaska, Tarr and Martin, 1.
  - Recent earthquakes, Davison (C.), 1.
  - Recent earthquakes in Guatemala, Rockstroh, 1.
  - Recent earthquakes in New Brunswick, Kain, 1.

Dynamic and structural geology (divisions by subject matter)—Continued.

- *Earthquakes*—Continued.
  - Records of the seismographs in North America and the Hawaiian Islands, Reid (H. F.), 14.
  - Regiones de temblores en México, Böse, 4.
  - Seismology in Canada, Stupart, 1.
  - Temblor en Guerrero, Böse and Angermann, 1.
  - Volcanoes and earthquakes, Hixon, 2.
  - Volcanoes and earthquakes in Nicaragua, Crawford, 2.
  - Volcanoes and seismic centers of the Philippine Archipelago, Maso, 1.
- *Erosion.*
  - Age of the Kansan drift sheet, Hershey, 4.
  - Asymmetry of crest lines in the high Sierra of California, Gilbert, 19.
  - Broad valleys of the Cordilleras, Shaler, 1.
  - Colossal bridges of Utah, Dyar, 1.
  - Colossal bridges of Utah, Winchell (N. H.), 22.
  - Concretions of Ottawa County, Bell (W. T.), 1.
  - Corrading action of river water during floods Morscher, 1.
  - Cuspate forelands, Wilson (A. W. G.), 8.
  - Dalles of the St. Croix, Berkey, 1.
  - Deflection of Mississippi, Bowman (I.), 2.
  - Depositional equivalent of hiatus at base of our Coal Measures, Keyes, 18.
  - Development of cut-off meanders, Tower, 1.
  - Development of river meanders, Davis (W. M.), 47.
  - Drainage features of California, Lawson (A. C.), 2.
  - Drift ice as a transporting agent, Prest, 2.
  - Drift ice as an eroding and transporting agent, Prest, 1.
  - Eboulement à Saint-Luc-de-Vincennes, Laflamme, 2.
  - Effect of cliff erosion on form of contact surfaces, Fenneman, 6.
  - Ellensburg folio, Smith (G. O.), 7.
  - Erosion by flying sand on beaches of Cape Cod, Julien, 6.
  - Erosion on the Great Plains, Upham, 25.
  - Erosion phenomena in St. Vincent and Martinique, Hovey (E. O.), 30, 35.
  - Erosion phenomena on Mont Pelée and Soufrière, Hovey (E. O.), 24.
  - Etching of quartz in interior of conglomerates, Fuller (M. L.), 2.
  - Fjords and hanging valleys, Upham, 30.
  - Formation of natural bridges, Cleland, 4.
  - Formation of Sandusky Bay, Moseley, 2.

Dynamic and structural geology (divisions by subject matter)—Continued.

- *Erosion*—Continued.
  - Geographical cycle in an arid climate, Davis (W. M.), 55.
  - Geological history of Charles River, Mass., Clapp, 1.
  - Geology of Mineral King, Knopf and Thelen, 1.
  - Geology of Salinas Valley, Nutter, 1.
  - Geology of the Tonopah mining district, Spurr, 29.
  - Geology of western Mexico, Farrington, 13.
  - Glacial erosion in northern Rockies, Matthes, 1.
  - Glacial erosion in the Sawatch Range, Davis (W. M.), 54.
  - Glaciation of the Sawatch Range, Davis (W. M.), 58.
  - Grand Canyon of the Colorado, Davis (W. M.), 1.
  - Hurricane fault in the Toquerville district, Huntington and Goldthwait, 2.
  - Ice erosion theory a fallacy, Fairchild, 11.
  - Instance of action of ice sheet upon projecting rock masses, Hobbs, 12.
  - Instances of moderate glacial erosion, Tarr, 9.
  - Kansas River flood, Haworth, 5.
  - Lake Chelan and its glacier, Gannett, 3.
  - Laws of river flow, Tutton, 1.
  - Leveling without base leveling, Davis (W. M.), 60.
  - Living plants as geological factors, Shimek, 6.
  - Modifications remarquables causées à l'embouchure de la Rivière Ste.-Anne, Laflamme, 1.
  - Mountain ranges of Great Basin, Davis (W. M.), 46.
  - Nantucket shore lines, Gulliver, 3.
  - Natural history and physiography of New Brunswick, Ganong, 3.
  - Natural monuments, Holder, 4.
  - Newark system of the Pomperaug Valley, Hobbs, 2.
  - Niagara group unconformities in Indiana, Elrod (M. N.), 1.
  - Northward flow of ancient Beaver River, Hice, 1.
  - Origin and classification of placers, Smyth (H. L.), 1.
  - Origin and structure of the Basin ranges, Spurr, 1.
  - Origin of pebble-covered plains in desert regions, Blake (W. P.), 11.
  - Particular case of glacial erosion, Sardeson, 14.
  - Past and future of Niagara Falls, Upham, 22.
  - Pelé and the evolution of the Windward Archipelago, Hill (R. T.), 16.
  - Peneplains of central France, Davis (W. M.), 2.

Dynamic and structural geology (divisions by subject matter)—Continued.
  Erosion—Continued.
    Peneplains of the Ozark highlands, Hershey, 1.
    Physiographic features of Klamath Mountains, Anderson (F. M.), 2.
    Pre-Glacial drainage in southwestern Ohio, Miller (A. M.), 1.
    Preliminary report upon bluff and Mississippi alluvial lands of Louisiana, Clendenin, 2.
    Profile of maturity in Alpine glacial erosion, Johnson (W. D.), 3.
    Quaternary of southern California, Hershey, 14.
    Rate of lateral erosion at Niagara, Wright (G. F.), 3.
    Recent shore forms, Gregory (W. M.), 1.
    River action phenomena, Todd (J. E.), 1.
    River beds and bluffs, Heiney, 1.
    Sea and mining, Lakes, 57.
    Sculpture of massive rocks, Gilbert, 20.
    Significance of Cretaceous outliers in Klamath region, Hershey, 10.
    Significance of U-shaped and stream channels, Matthes, 3.
    Still rivers of western Connecticut, Hobbs, 6.
    Story of Niagara, Hitchcock (C. H.), 2.
    Taconic physiography, Dale, 9.
    Tidal scour in harbors, Frizell, 1.
    Tidal scour in harbors, Hodgdon, 1.
    Twin lakes glaciated area, Westgate, 1.
    Wasatch, Canyon; and House ranges, Davis (W. M.), 59.
    Wave cutting on west shore of Lake Huron, Gordon (C. H.), 3.
    Work of rivers, Gordon (C. H.), 6.
  Faulting.
    Basin range structure of the Humboldt region, Louderback, 4.
    Bisection of mountain blocks, Keyes, 52.
    Block Mountains in New Mexico, Johnson (D. W.), 7.
    Camp Bird and Smuggler-Union fissures, Purington, 10.
    Cockeysville marble, Mathews and Miller, 1.
    Conditions in veins and faults in Butte, Braden, 1.
    Complicated fault system, Bacorn, 1.
    Copper deposits of Clifton-Morenci district, Lindgren, 29.
    Correlation of fracture systems, Hobbs, 25.
    Cross-vein ore-shoots and fractures, Weed, 22.
    Examples of Colorado faults, Lakes, 95.
    Faulting and mountain structure in Arizona, Ransome, 5.
    Faulting at Tonopah, Spurr, 24.
    Fault phenomena, Lakes, 93, 94.

Dynamic and structural geology (divisions by subject matter)—Continued.
  Faulting—Continued.
    Fault phenomena near Glen Echo, Gilbert, 25.
    Fault-planes in the Dakota fire-clay beds at Golden, Patton, 3.
    Fault slip in Ogden Canyon, Talmage, 1.
    Fault system, Gunther, 2.
    Faults in the Dakota formation at Golden, Patton, 4.
    Faults with special reference to coal and metal mining, Lakes, 92.
    Folded faults of southern Appalachians, Keith, 2, 10.
    Fracture valley system, Iddings, 2.
    Geologic structure of region around Middlesboro, Ky., Ashley, 5.
    Geological structure of Jornada del Muerto, Keyes, 53.
    Geological structure of southwestern New England, Hobbs, 14.
    Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
    Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
    Geology and vein phenomena of Arizona, Comstock (T. B.), 1.
    Geology of Globe copper district, Ransome, 6.
    Geology of the Boulder district, Fenneman, 10.
    Geology of the Moose River gold district, Woodman, 4.
    Geology of the Tonopah mining district, Spurr, 29.
    Grand Canyon of the Colorado, Davis (W. M.), 1.
    Great fault of the Bitterroot Mountains, Lindgren, 30.
    Historical geology of Esmeralda County, Nev., Turner, 5.
    Hurricane fault in southwestern Utah, Huntington and Goldthwait, 1.
    Hurricane fault in the Toquerville district, Huntington and Goldthwait, 2.
    King-Ritter fault, Ruhl, 1.
    Laws of formation of New Mexico mountain ranges, Herrick (C. L.), 4.
    Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich and Smith, 1.
    Lineaments of the Atlantic border region, Hobbs, 22.
    Mapping of crystalline schists. II. Basal assumptions, Hobbs, 11.
    Marcellus fault, Schneider, 3.
    Miniature overthrust fault and anticline, Purdue, 2.
    Mountain ranges of Great Basin, Davis (W. M.), 46.
    Newark system of the Pomperaug Valley, Hobbs, 2.
    Origin and structure of the Basin ranges, Spurr, 1.

Dynamic and structural geology (divisions by subject matter)—Continued.
Faulting—Continued.
Origin of transverse mountain valleys, Le Conte, 1.
Overthrust faults in central New York, Wheelock, 2.
Overthrust faults in New York, Schneider, 9.
Overthrust in northern Rockies, Willis, 9.
Paleozoic limestones of Kittatinny Valley, Kümmel and Weller, 1.
Plateau province of Utah and Arizona, Davis (W. M.), 45.
Post-Newark normal faulting in the crystalline rocks of southwestern New England, Hobbs, 19.
Relation of faults to topography, Spurr, 16.
River system of Connecticut, Hobbs, 3.
Rocks of Rondout, Van Ingen and Clark, 1.
Stratigraphy and structure, Lewis and Livingston ranges, Montana, Willis, 6.
Stratigraphy of Uinta Mountains, Berkey, 8.
Structural features of the Joplin district, Siebenthal, 4.
Structure and genesis of the Comstock lode, Reid (J. A.), 3.
Structures of Basin ranges, Keyes, 45.
Tectonic geography of southwestern New England and southeastern New York, Hobbs, 23.
Überschiebungen in Nordamerika, Willis, 14.
Wasatch, Canyon, and House ranges, Davis (W. M.), 59.
Folding.
Anticlinal folds near Meadville, Pa., Smallwood and Hopkins, 1.
Anticlinal mountain ridges in central Washington, Smith (G. O.), 10.
Basin-range structure in Death Valley region, Campbell (M. R.), 13.
Cockeysville marble, Mathews and Miller, 1.
Ellensburg folio, Smith (G. O.), 7.
Folded faults of southern Appalachians, Keith, 2, 10.
Folds on the border of the Appalachian system, Kindle, 4.
Geologic structure of region around Middlesboro, Ky., Ashley, 5.
Geological structure of southwestern New England, Hobbs, 14.
Geology of Miller County, Ball and Smith, 1.
Geology of the Moose River gold district, Woodman, 4.
Mapping of crystalline schists. II. Basal assumptions, Hobbs, 11.
Marcellus fault, Schneider, 3.
Miniature overthrust fault and anticline, Purdue, 2.

Dynamic and structural geology (divisions by subject matter)—Continued.
Folding—Continued.
Misnamed Indiana anticline, Richardson (G. B.), 1.
Oil of the northern Rocky Mountains, Willis, 4.
Origin and structure of the Basin ranges, Spurr, 1.
Overturns in the Denver basins, Henderson (J.), 1.
Paleozoic limestones of Kittatinny Valley, Kümmel and Weller, 1.
Plication in the rocks of Cananea, Blake (W. P.), 17.
Recent folds in Lorraine shales, Wilson (A. W. G.), 4.
Recent work in the bituminous coal field of Pennsylvania, Campbell (M. R.), 11.
Stratigraphy and structure, Lewis and Livingston ranges, Montana, Willis, 6.
Structural details in Green Mountain region, Dale, 1.
Structure of Klamath Mountains, Hershey, 17.
Structure of Piedmont Plateau, Mathews, 5.
Syncline as a structural type, Rickard (T. A.), 10.
Überschiebungen in Nordamerika, Willis, 14.
Glaciers.
Alaska glaciers and glaciation, Gilbert, 13.
Arapahoe glacier in 1905, Henderson (J.), 5.
Asymmetry of crest lines in the high Sierra of California, Gilbert, 19.
Effect of superficial débris on the advance and retreat of some Canadian glaciers, Ogilvie, 4.
Flow of glaciers and their stratification, Reid (H. F.), 12.
Glacial erosion in northern Rockies, Matthes, 1.
Glacial erosion in the Sawatch Range, Davis (W. M.), 54.
Glacial exploration in the Montana Rockies, Chaney, 1.
Glacial studies in the Canadian Rockies, Sherzer, 2.
Glacier of Mount Lyell, Lee (W. T.), 10.
Glaciers of Alaska, Davidson, 1.
Glaciers of Mount Hood and Mount Adams, Reid (H. F.), 17.
Lewis Range of Montana and its glaciers, Matthes, 4.
Pacific coast glaciers, Muir, 1.
Profile of maturity in Alpine glacial erosion, Johnson (W. D.), 3.
Reconnaissance of Mount Hood and Mount Adams, Reid (H. F.), 4.
Relation of blue veins of glaciers to the stratification, Reid (H. F.), 11.

Dynamic and structural geology (divisions by subject matter)—Continued.
Glaciers—Continued.
Reservoir lag in glacier variations, Reid (H. F.), 16.
Statics of a tidal glacier, Gilbert, 12.
Theory of glacial motion, Chamberlin (T. C.), 14.
Structur des grönländischen Inlandeises, Mügge, 1.
Translationsfähigkeit des Eises, Mügge, 2.
Variations of glaciers, Reid (H. F.), 2, 3, 5, 8-10, 13.
Variations périodiques des glaciers, Vaux and Vaux, 2.
Intrusion.
Alnoite dikes in East Canada Creek, Schneider, 10.
Classification of igneous rocks, Daly, 12.
Conglomerate dikes in southern Arizona, Campbell (M. R.), 15.
Eruption of rhyolite, Gilbert, 9.
Eruptive dikes near Ithaca, Schneider, 7.
Fossiliferous sandstone dikes in the Eocene of Tennessee and Kentucky, Glenn, 8.
Geology of the Black Hills, Jaggar, 5.
Geology of the serpentines of central New York, Schneider, 6.
Igneous rocks of Highwood Mountains, Pirsson, 4.
Laccoliths of the Black Hills, Jaggar, 1.
Mechanics of igneous intrusion, Daly, 8.
New dike at Ithaca, Barnett, 1.
Observations at Pegmatite Hill, Ruhl, 2.
Peridotite dikes near Ithaca, Matson, 2.
Jointing.
Camp Bird and Smuggler-Union fissures, Purington, 10.
Fault phenomena near Glen Echo, Gilbert, 25.
Geological structure of southwestern New England, Hobbs, 14.
Geology of Miller County, Ball and Smith, 1.
Joint veins, Gilbert, 2, 8.
River system of Connecticut, Hobbs, 3.
Simultaneous joints, Becker, 6.
Landslides.
Frank disaster, Fernie, 1
Frank disaster, Green, 1.
Frank disaster, Smith (F. B.), 2.
Landslide at Frank, Alberta, McConnell and Brock, 1.
Landslide in Chaco Cañon, Dodge, 3.
Landslide on the Lièvre River, Barlow, 9.
Landslide on Lièvre River, Ells (R. W.), 16.
Landslides of Mount Greylock and Briggsville, Mass., Cleland, 1.
Rock slide at Alberta, Brewer (W. M.), 10.

Dynamic and structural geology (divisions by subject matter)—Continued.
Landslides—Continued.
Rock slide at Frank, Haanel, 1.
Turtle Mountain rock slide, Dowlen, 1.
Magmatic differentiation.
Acidic magmas, Stevens (B.), 4.
Cause of border segregation in igneous magmas, Park, 1.
Deposition of ores from an igneous magma, Stevenson (R.), 2.
Differentiation of igneous magmas, Stevens (B.), 3.
Geology of Ascutney Mountain, Daly, 7.
Geology of the Tonopah mining district, Spurr, 29.
Igneous rocks and their segregation, Spurr, 12.
Petrographic province of central Montana, Pirsson, 5.
Phase rule and conceptions of igneous magmas, Read, 5.
Size of grain in igneous rocks, Lane, 24.
Metamorphism.
Geology of Ascutney Mountain, Daly, 7.
Geology of Mineral King, Knopf and Thelen, 1.
Limestone-granite contact deposits of Washington Camp, Crosby, 16.
Physical effects of contact metamorphism, Barrell, 2.
Structure of the Piedmont Plateau, Mathews, 5.
Treatise on metamorphism, Van Hise, 12.
Ore formation.
Chemistry of copper deposits, Lindgren, 23.
Chemistry of ore deposition, Jenney, 4.
Chemistry of ore deposition, Sullivan, 1.
Circulation of underground aqueous solutions and the deposition of lode ores, Finch (J. W.), 1.
Clifton folio, Lindgren, 28.
Copper deposits of Clifton-Morenci district, Lindgren, 29.
Copper Mountain, Catherinet, 1.
Deposition of copper by solutions of ferrous salts, Biddle, 1.
Deposition of ores from an igneous magma, Stevenson (R.), 1.
Differentiation of igneous magmas and the formation of ores, Kemp, 22.
Enrichment in fissure veins, Hill (R. T.), 17.
Enrichment in fissure veins, Spurr, 30.
Enrichment in veins, Church, 3.
Formation of lead and zinc deposits of Mississippi Valley, Keyes, 16, 20.
Formation of veins, Kemp, 28.
Genesis of gold deposits of Baskerville, Atkin, 1.
Genesis of Lake Superior iron ores, Leith, 15.
Genesis of the magnetite deposits in Sussex County, N. J., Spencer (A. C.), 12.

Dynamic and structural geology (divisions by subject matter)—Continued.

Ore formation—Continued.

Genesis of limonite ores, Garrison, 1.
Genesis of ore deposits, Alderson, 1.
Genesis of ore deposits, Boehmer, 1.
Genesis of ore deposits at Bingham, Utah, Boutwell, 14.
Genetic relations of western Nevada ores, Spurr, 31.
Gold deposition by drainage, Bradford, 1.
Igneous rocks and circulating waters as factors in ore deposition, Kemp, 19.
Limestone-granite contact deposits of Washington Camp, Crosby, 16.
Magmatic origin of vein-forming waters in southeastern Alaska, Spencer (A. C.), 17.
Mineral crest, Jenney, 3.
Ore deposition and deep mining, Lindgren, 27.
Ore deposition and vein enrichment, Weed, 20.
Ore deposits, Beck, 2.
Ore deposits near igneous contacts, Weed, 19.
Origin of Clinton red fossil ore in Lookout Mountain, Alabama, Bowron, 1.
Phase rule and conceptions of igneous magmas, Read, 5.
Present standing of applied geology, Ransome, 15.
Rock segregation and ore deposition, Stevens (B.), 2.
Secondary enrichment in ore deposits of copper, Kemp, 33.
The new geology and vein formation, Carpenter, 1, 2.
Theory of copper deposition, Lane, 28.
Underground water circulation, Cross (C. M.), 1.

Orogeny.

Formation des montagnes, Burckhardt, 1.
Mountain growth and mountain structure, Willis, 15.

Oscillation.

Ames Knob, North Haven, Me., Willis, 12.
Ancient lake beaches on islands in Georgian Bay, Comstock (F. M.), 2.
Broad valleys of the Cordilleras, Shaler, 1.
Correlation of formations of middle West, Hatcher, 21.
Differential movement along New England coast, Curtis, 4.
Effect of cliff erosion on form of contact surfaces, Fenneman, 6.
Evidence of local subsidence, Campbell (J. T.), 1.
Evidences of caves of Put-in-Bay on question of land tilting, Fuller (M. L.), 16.

Dynamic and structural geology (divisions by subject matter)—Continued.

Oscillation—Continued.

Geological notes, Hollick, 13.
Mountain growths of Great Plains, Willis, 10.
Geology of Mississippi embayment, Harris, 2.
Geomorphogeny of Klamath Mountains, Diller, 3.
Hydrographic history of South Dakota, Todd (J. E.), 4.
Marine Pliocene and Pleistocene stratigraphy of coast of California, Arnold and Arnold, 1.
Oscillations in the sea level, Pearson (H. W.), 1.
Paleozoic seas and barriers in eastern North America, Ulrich and Schuchert, 1.
Pleistocene geology of Moers quadrangle, Woodworth, 9.
Post-Newark depression and subsequent elevation within the area of southwestern New England, Hobbs, 19.
Post-Tertiary elevation of the Sierra Nevada, Turner, 10.
Raised beaches, Pearson (H. W.), 3.
Raised shore lines of St. Lawrence Valley and Great Lakes, Chalmers, 6.
Recent changes in the elevation of land and sea in the vicinity of New York City, Tuttle, 1.
Recent changes of level in Alaska, Tarr and Martin, 1.
Recent earth movements, Lakes, 42.
Recent elevation of Gulf coast, Vaughan, 11.
Reconnaissance of the Cape Nome and adjacent fields of Seward Peninsula, Brooks and others, 1.
Sand plains of Glacial Lake Sudbury, Goldthwait, 1.
Significance of Cretaceous outliers in Klamath region, Hershey, 11.
Submarine canyon of Hudson River, Spencer (J. W.), 12, 13.
Submerged valleys in Sandusky Bay, Mosely, 1.
Terraces of Westfield River, Mass., Davis (W. M.), 28.
Union of Cuba with Florida, Spencer (J. W.), 11.

Sedimentation.

Accretion of flood plains by sand bars, Simpson, 1.
Beach structure in Medina sandstone, Fairchild, 1.
Caliche of southern Arizona, Blake (W. P.), 4.
Concretions and their geological effects, Todd (J. E.), 6.
Delta of St. Clair River, Cole (L. J.), 1.
Depositional measure of unconformity, Keyes, 1.
Formation of veins, Kemp, 28.

Dynamic and structural geology (divisions by subject matter)—Continued.
Sedimentation—Continued.
  Former extent of Newark system, Hobbs, 9.
  Geological relationship of volcanoes of West Indies, Spencer (J. W.), 8.
  Geology of Charles River estuary, Crosby, 7.
  Ice-borne sediments in Minas basin, Bancroft (J. A.), 1.
  Island tying, Gulliver, 5.
  Loess in the Missouri Valley, Wright (G. F.), 8.
  Origin of bedded breccias in Arkansas, Adams (G. I.), 13.
  Micaceous cross banding of strata, Woodworth, 1.
  Mineral de Angangueo, Ordoñez, 11.
  Samples of the sea floor along the coast of east Greenland, Böggild, 3.
  Sea and mining, Lakes, 57.
  Theory of formation of sedimentary deposits, Wilson (A. W. G.), 7.
Underground temperature.
  Determination of subterranean temperature, Gilbert, 22.
  Distribution of the internal heat of the earth, Chamberlin (T. C.), 9.
  Geothermal gradient, Lane, 13.
  Geothermal gradient in Michigan, Lane, 16.
  Investigation of subterranean temperatures and gradients, Gilbert, 6.
  Plans for obtaining subterranean temperatures, Gilbert, 21.
  Transmission of heat into the earth, Lane, 42.
  Variation of geothermal gradient in Michigan, Lane, 27.
Volcanoes.
  Activity of Mont Pelée, Heilprin, 4.
  Análisis de cenizas del volcan de Santa Maria, Villaseñor, 1.
  Antillean volcanoes, McGee, 3.
  Area cubierta por la ceniza del volcan de Santa Maria, Böse, 6.
  Ausbruch des Vulkans St. Maria, Sapper, 5, 6.
  Ausbruchsperiode des Mont Pelé, Stübel, 2.
  Bibliography of West Indian eruptions, Hovey (E. O.), 32.
  Bogoslof, our newest volcano, Merriam (C. H.), 1.
  Cenizas del volcan de Santa Maria, Ordoñez, 13.
  Characteristics of Kau, Emerson (J. S.), 1.
  Composition des gaz des fumerolles du Mont Pelée, Gautier, 1.
  Cripple Creek volcano, Rickard (T. A.), 1.
  Der Vulkan, Haas, 1.
  Die vulcanischen Kleinen Antillen und die Ausbrüche der Jahre 1902 und 1903, Sapper, 10.

Dynamic and structural geology (divisions by subject matter)—Continued.
Volcanoes—Continued.
  Earthquake and volcanic eruption in Guatemala, Eisen, 1.
  Éruption de la Martinique, Lacroix and others, 1.
  Éruption de la Montagne Pelée, Lacroix, 13.
  Éruption de la montagne Pelée, Michel-Lévy, 1.
  Éruption du volcan de Saint-Vincent, Lacroix, 15.
  Eruption of Mauna Loa, Wood (Edgar), 1.
  Eruption of Pelée, Jaggar, 8.
  Eruption of Mount Pelée, Jaggar, 6.
  Éruption volcanique à la Martinique, Thierry, 1.
  Éruptions de Saint-Vincent, Lacroix, 19.
  Éruptions des nuages de la Montagne Pelée, Lacroix, 12.
  Éruptions du volcan de Colima, Ordoñez, 10.
  Eruptions of Colima, Arreola, 1.
  Eruptions of La Soufrière, St. Vincent, in May, 1902, Hovey (E. O.), 10.
  Eruptions of La Soufrière, St. Vincent, and Mont Pelée, Martinique, Hovey (E. O.), 9.
  Eruptions of Mont Pelé and the Soufrière, Hovey (E. O.), 33.
  Eruptions of Soufrière, Anderson and Flett, 2.
  Éruptions volcaniques de la Martinique, Lacroix, 11.
  État actuel de la Soufrière de la Guadeloupe, Lacroix, 14.
  État actuel du volcan de la Montagne Pelée, Lacroix, 8.
  Field notes of a geologist in Martinique and St. Vincent, Jaggar, 2.
  Flutschwankungen und die vulkanischen Ereignisse in Mittelamerika, Krebs, 1.
  Gaz des fumerolles du Mont Pelée, Moissan, 1.
  Geological features of Azores, Howarth, 1.
  Geological relationship of volcanoes of West Indies, Spencer (J. W.), 8.
  Geology and petrography of Crater Lake National Park, Diller and Patton, 1.
  Geology and water resources of Snake River Plains, Russell, 5.
  Geology of Crater Lake, Diller, 2.
  Grand Soufrière of Guadeloupe, Hovey (E. O.), 28, 31.
  Independencia de los volcanes de grietas preexistentes, Böse, 1.
  Inner cone of Mont Pelée, Hovey (E. O.), 23.
  Kilauea again active, Hitchcock (C. H.), 9.

Dynamic and structural geology (divisions by subject matter)—Continued.
Volcanoes—Continued.
Krater der Soufrière von St. Vincent, Sapper, 16.
La Montagne Pelée et ses éruptions, Lacroix, 20.
Latest eruption of Colima volcano, Ishikawa, 1.
Martinique, Sapper, 15.
Martinique and St. Vincent; preliminary report upon the eruptions of 1902, Hovey (E. O.), 12.
Martinique and St. Vincent revisited, Hovey (E. O.), 18.
Martinique und St. Vincent, Stübel, 1.
Martinique und sein Vulkanismus, Deckert, 2.
Massive-solid volcanic eruptions, Russell, 13.
Mechanism of Mont Pelé spine, Gilbert, 16.
Mission de la Martinique, Lacroix, 4, 16.
Mohokea caldera on Hawaii, Hitchcock (C. H.), 3.
Mont Pelé, Hovey (E. O.), 20, 26.
Mont Pelée, Jaggar, 4.
Mont Pelée and tragedy of Martinique, Heilprin, 3.
Mont Pelée—the eruptions of August 24 and 30, 1902, Heilprin, 7.
Mount Pelée, Hovey (E. O.), 19.
Mount Pelee, Jefferson, 2.
Mud volcanoes, Lakes, 58.
Nature of Pelé tower, Heilprin, 8.
Nature of phenomena of eruption of Mont Pelée, Divers, 1.
New cone and obelisk of Mont Pelé, Hovey (E. O.), 29.
New cone of Mont Pelé, Hovey (E. O.), 17.
Next eruption of Pelée, Jaggar, 3.
Obelisk of Mont Pelé, Hovey (E. O.), 21.
Obelisk of Mont Pelée, Heilprin, 6.
Obelisk of Montagne Pelée, Heilprin, 5.
Observaciones geologicas al Citlaltepetl, Angermann, 4.
Observatios sur les éruptions volcaniques, Lacroix, 7.
Origen de los temblores de Zanatepec, Böse, 5.
Origine de l'activité volcanique, Meunier, 1.
Peculiar character of eruption of Mont Pelée, Verrill, 1.
Pelé and the evolution of the Windward Archipelago, Hill (R. T.), 16.
Pelé obelisk, Russell, 12.
Pelé obelisk, Russell, 22.
Pelée's obelisk, Argall (P. H.), 1.
Peléliths, Winchell (N. H.), 21.
Preliminary report on recent eruption of Soufrière in St. Vincent, and of a visit to Mont Pelée in Martinique, Anderson and Flett, 1.

Dynamic and structural geology (divisions by subject matter)—Continued.
Volcanoes—Continued.
Présence de l'argon dans les gaz des fumerolles de la Guadeloupe, Moissan, 2.
Recent eruptions in West Indies, Milne, 1.
Recent eruptions of Mont Pelée, Nicholls, 1.
Recent tuffs of the Soufrière, Howe (E.), 2.
Recent volcanic eruptions, Anderson (T.), 1.
Recent volcanic eruptions in West Indies, Russell, 3.
Reconnaissance of Mount Hood and Mount Adams, Reid (H. F.), 4.
St. Vincent, Sapper, 18.
St. Vincent, eruptions of 1902, Hovey (E. O.), 36.
Secondary phenomena of West Indian volcanic eruptions, Curtis, 1.
Soufrière of St. Vincent, Hovey (E. O.), 27.
Südlichsten Vulkane Mittel-Amerikas, Sapper, 2.
Tower of Pelée, Heilprin, 9, 10.
Visit to Martinique and St. Vincent after the great eruptions of May and June, 1902, Hovey (E. O.), 11.
Volcan de Tacana, Böse, 3.
Volcanes de Zacapu, Ordoñez, 9.
Volcanic action and the West Indian eruptions of 1902, Lobley, 1.
Volcanic disturbances in West Indies, Hill (R. T.), 6.
Volcanic eruptions in Guatemala, Winterton, 1.
Volcanic eruptions in the West Indies, Anderson (T.), 2.
Volcanic eruptions in the West Indies, Burns, 1.
Volcanic eruptions on Martinique and St. Vincent, Russell, 4.
Volcanoes, Lakes, 34.
Volcanoes and earthquakes, Hixon, 2.
Volcanoes and seismic centers of the Philippine Archipelago, Maso, 1.
Volcanoes of Caribbean Islands, Hovey (E. O.), 22.
Volcanoes of Martinique, Guadeloupe, and Saba, Hovey (E. O.), 44.
Volcanoes of St. Vincent, St. Kitts, and Statia, Hovey (E. O.), 45.
Vulcangebiete Mittelamerikas und Westindiens, Sapper, 24.
Vulkanausbruch in Mittelamerika, Sapper, 23.
Vulkan Izalco, Sapper, 7.
Vulkane Pelé, Krakatau, Etna, Vesuv, Kewitsch, 1.
Vulkane von Guatemala und Salvador, Sapper, 1.
Vulcanische Asche vom Vulcan Soufrière, Klein, 1.

Dynamic and structural geology (divisions by subject matter)—Continued.

Volcanoes—Continued.

Vulkanische Ausbrüche auf den Kleinen Antillen, Hoernes, 1.
Vulkanische Ereignisse in Mittelamerika, Sapper, 20, 21.
Vulkanische Ereignisse in Westindien, Bergeat, 1.
Vulkanske udbrud i Vestindien, Kolderup, 3.
West Indian eruptions of 1902, Curtis, 2.
West Indian volcanic eruptions, Milne, 2.
Xinantacatl ou volcan Nevado de Toluca, Ordoñez, 7.

Weathering.

Action of frost on soil, Roberts, 1.
Bowlders due to rock decay, Upham, 24.
Copper-bearing rocks of Virgilina copper district, Watson (T. L.), 6.
Heat and frost in weathering of stone, Barnum, 1.
Weathering of granitic rocks, Watson (T. L.), 4.

General.

Abstraction of oxygen from the atmosphere by iron, Smyth (C. H.), 7.
Aqueous origin of loess, Wright (G. F.), 11.
Arroyo formation, Dodge, 3.
Autophytography, White (C. H.), 2.
Basalt mounds of the Columbia lava, Piper, 1.
Bathymetrical features of the north Polar seas, Nansen, 2.
Blazing beach, Penhallow, 7.
Buried cypress forests, Bibbins, 3.
Caliche of southern Arizona, Blake (W. P.), 3.
Celestite-bearing rocks, Kraus, 5.
Clastic dikes, Newsom, 4.
Climatic features in the land surface, Penck, 1.
Colorado Canyon, Davis (W. M.), 61.
Comparison of features of the earth and the moon, Shaler, 2.
Configuration of rock floor of Greater New York, Hobbs, 27.
Connection by precise leveling between the Atlantic and Pacific oceans, Hayford, 1.
Connection by precise leveling between Atlantic and Pacific oceans, Williams (E. H.), 3.
Controlling sand dunes in the United States and Europe, Hitchcock (A. S.), 1.
Copper ore and garnet in association, Blake (W. P.), 16.
Correction, Van Hise, 16.
Crystosphenes in northern America, Tyrrell, 3.
Current notes on physiography, Davis (W. M.), 19, 42.
Deposition of the loess, Owen, 5.

Dynamic and structural geology (divisions by subject matter)—Continued.

General—Continued.

Derivation of the terrestrial spheroid from the rhombic dodecahedron, Keyes, 3.
Devonian interval in Missouri, Keyes, 26.
Differential thermal conductivities of certain schists, Thelen, 1.
Discoloration of rocks, Comstock (T. B.), 4.
Distribution of the internal heat of the earth, Chamberlin (T. C.), 6.
Domes and dome structure of the high Sierra, Gilbert, 17.
Drumlins of southeastern Wisconsin, Alden, 4.
Earth carving, Scott (W. B.), 2.
Effect of cliff erosion on form of contact surfaces, Fenneman, 6.
Effect of shore line on waves, Davis (W. M.), 32.
Effects due to lightning discharge, Hallock, 1.
Ellipsoidal structure in pre-Cambrian rocks of Lake Superior region, Clements, 4.
Etching of quartz in interior of conglomerates, Fuller (M. L.), 2.
Evidences (?) of water-deposition of loess, Shimek, 14.
Examples of joint-controlled drainage, Hobbs, 26.
Experimental investigation into flow of marble, Adams and Nicholson, 2.
Experimental work on flow of rocks, Adams and Nicholson, 1.
Experiments illustrating intrusion and erosion, Howe, 1.
Field work of a physiography class, Low, 5.
Flints and other hard rocks, Lakes, 100.
Flow of rocks, Adams, 11.
Formation of coal beds, Parks, 9.
Forms of sand dunes, Cobb, 4.
Fundamental problems of geology, Chamberlin (T. C.), 13, 15.
Fundamental propositions in the theory of elasticity, Cilley, 1.
Geogenesis and its bearings on economic geology, Frazer, 9.
Geologic deposition of hydrocarbons, Adams (G. I.), 10.
Geologic features within the 8,000-acre grant, Sheldon and Sheldon, 1.
Geologic relations of the human relics of Lansing, Kans., Chamberlin (T. C.), 5.
Geological changes now going on, Lane, 25.
Geologizing by the seaside, Lakes, 56.
Geology, Chamberlin and Salisbury, 1.
Geology of hot springs of Colorado, Lakes, 90, 103.

Dynamic and structural geology (divisions by subject matter)—Continued.

General—Continued.

- Geophysical investigations suggested, Adams (F. D.), 9.
- Grain of rock, Lane, 43.
- Hanging valleys, Russell, 20.
- Has the rate of rotation of the earth changed appreciably during geological history? Chamberlin (T. C.), 7, 10.
- Hot and mineral springs of Routt County, Colo., Lakes, 97.
- Hot springs of the southern United States, Weed, 39.
- Hypothesis to account for the transformation of vegetable matter into different grades of coal, Campbell (M. R.), 20.
- Ice ramparts, Buckley, 2.
- Ice ramparts, Van Hise, 4.
- Interpretation of certain laminated clays, with their bearing upon estimates of geologic time, Berkey, 10.
- Isomorphism and thermal properties of the feldspars, Day and Allen, 1, 2.
- Junction of Lake Superior sandstone and Keweenawan traps in Wisconsin, Grant (U. S.), 2.
- Linear force of growing crystals, Becker and Day, 1.
- Loess and the Iowan drift, Shimek, 13.
- Loess with horizontal shearing planes, Udden, 4.
- Lord Kelvin's address on the age of the earth, Chamberlin (T. C.), 4.
- Magnetic phenomena around deep borings, Lane, 33.
- Materials and manufacture of Portland cement, Eckel, 31.
- Metamorphosis without crushing, Emerson (B. K.), 2.
- Mica and the mica industry, Colles, 1.
- Mineral matter of the sea, Salisbury, 5.
- Nantucket shore lines, Gulliver, 3.
- Natural mounds, Purdue, 6.
- Natural mounds, Spillman, 1.
- Natural mounds or hog wallows, Branner, 8.
- Nebular and planetesimal theories of the earth's origin, Upham, 29.
- Nitrates in cave earths, Nichols (H. W.), 1.
- Notes on oceanography, Dall, 2.
- Occurrence of pebbles, concretions, and conglomerate in metalliferous veins, Halse, 5.
- Oil-impregnated volcanic dikes, Lakes, 98.
- Origin and classification of placers, Smyth (H. L.), 1
- Origin of bitumen, Morgan, 1.
- Origin of channels surrounding Manhattan Island, Hobbs, 24.
- Origin of coral reefs, Gardiner, 1.
- Origin of gypsum, Grimsley, 8.
- Origin of gypsum deposits, Sherwin, 2.
- Origin of natural mounds, Veatch, 10.
- Origin of ocean basins on planetesimal hypothesis, Chamberlin (T. C.), 11.
- Origin of orbicular and concretionary structure, Blake (W. P.), 19.
- Origin of pebble-covered plains in desert regions, Blake (W. P.), 11.
- Origin of petroleum, coal, etc., Plotts, 1.
- Origin of ripple marks, Branner, 1.
- Origin of the Coal Measure fire clays, Hopkins (T. C.), 2.
- Origin of vein-filled openings in southeastern Alaska, Spencer, 18.
- Origin of veins in asbestiform serpentine, Merrill (G. P.), 14.
- Paleozoic Appalachia, Willis, 1.
- Peat and its relation to coal, Lakes, 96.
- Peneplains of central France, Davis (W. M.), 2.
- Physical geography, etc., of Essex County, Mass., Sears, 1.
- Physical history of the Windward Islands, Hill (R. T.), 18.
- Plan of the earth and its causes, Gregory (J. W.), 1.
- Polar climate in time the major factor in the evolution of plants and animals, Wieland, 4.
- Possible function of disruptive approach in the formation of meteorites, comets, and nebulæ, Chamberlin (T. C.), 2.
- Prairie mounds of Louisiana, Hilgard, 6.
- Preservation of plants by geologic processes, Hollick, 18.
- Problems of geophysics, Becker, 4.
- Profiles of rivers, Gannett, 1.
- Recent date of lava flows in California, Wright (G. F.), 14.
- Report of advisory committee on geophysics, Woodward (R. S.), 1.
- Ripple marks in Hudson River limestone, Moore and Hole, 1.
- Rival theories of cosmogony, Fisher (O.), 1.
- Rock basins of Helen mine, Michipicoten, Canada, Coleman, 11.
- Rock cleavage, Leith, 13.
- Rock movements in the Laurentian and Huronian areas, Mills (S. D.), 1.
- Rounded sands of Paleozoic formations, Van Ingen, 6.
- Schistosity and slaty cleavage, Becker, 3.
- Secondary origin of certain granites, Daly, 11.
- Shorelines and landslips of St. Lawrence Valley, Chambers, 1.
- Small mounds, Bushnell, 1.
- Smoking bluffs of the Missouri River region, Powers, 1

Dynamic and structural geology (divisions by subject matter)—Continued.

- *General*—Continued.
  - So-called alkali spots of drift-sheets, Willcox, 2.
  - Structure of front range, northern Rocky Mountains, Willis, 7.
  - Study of the structure of fulgurites, Julien, 1.
  - Study of hard-packed sand and gravel, Crosby, 5.
  - Study of minerals in the laboratory, Day (A. L.), 1.
  - Subterranean gases of Cripple Creek, Lindgren, 31.
  - Superficial blackening and discoloration of rocks, Comstock (T. B.), 4.
  - Superficial blackening of rocks in desert regions, Blake (W. P.), 15.
  - Surface geology of New Brunswick, Stead, 1.
  - Syllabus for field and laboratory work in geology, Tarr, 1.
  - Technology of clays, Beyer and Williams, 1.
  - Teoria quimica para explicar la formacion del petroleo de Aragon, Villarello, 3.
  - Tertiary peneplain in Klamath region, California, Hershey, 15.
  - Theories of world building, Coleman, 21.
  - Tidal gage work in Louisiana, Harris, 9.
  - Types of sedimentary overlap, Grabau, 19.
  - Undulations of Lockport limestone, Gilbert, 23.
  - Valleys of solution in northern Arkansas, Purdue, 1.
  - Volcanic origin of oil, Coste, 3.
  - Wreck of Mount Mazama, Diller, 8.
  - Zuni salt lake, Darton, 19.

Economic geology.

- *Alabama.*
  - Alabama coal fields, McCalley, 1.
  - Cement resources of Alabama, Smith (E. A.), 3, 4.
  - Clays of the United States, Ries, 6.
  - Geology and cement resources of the Tombigbee River district, Eckel and Crider, 1.
  - Geology of the Coosa Valley, U. S. G. S., 1.
  - Iron ores in the Brookwood quadrangle, Burchard, 3.
  - Index to mineral resources of Alabama, Smith and McCalley, 1.
  - Marble formations of the Cahaba River, Byrne, 1, 2
  - Materials and manufacture of Portland cement, Eckel, 13, 31.
  - Origin of Clinton red fossil ore, Bowron, 1.
  - Phosphate deposits, Brown (L. P.), 1.
  - Portland-cement materials of Alabama, Smith (E. A.), 2, 8.

Economic geology—Continued.

- *Alabama*—Continued.
  - Pratt coal mines, Crane, 6.
  - Rome folio, Hayes (C. W.), 5.
  - Southern Appalachian coal field, Hayes (C. W.), 7.
  - Warrior coal basin in the Brookwood quadrangle, Butts, 5.
  - Water powers of Alabama, Hall (B. M.), 1.
- *Alaska.*
  - Alaskan tin deposits, Collier, 11.
  - Alaska's mineral wealth, Brooks, 10, 13.
  - Alaska-Treadwell mine, Palache, 2.
  - Auriferous quartz veins on Unalaska Island, Collier, 10.
  - Bering River coal field, Martin (G. C.), 15.
  - Cape Yaktag placers, Martin (G. C.), 12.
  - Chistochina gold field, Mendenhall, 4.
  - Chitina copper deposits, Mendenhall, 7.
  - Coal-bearing series of the Yukon, Collier, 6.
  - Coal fields of Cape Lisburne, Collier, 3, 7.
  - Coal fields of Cook Inlet, Alaska, and Pacific coast, Kirsopp, 1.
  - Coal resources of Alaska, Brooks, 3.
  - Coal resources of southwestern Alaska, Stone (R. W.), 5.
  - Coal resources of the Yukon, Collier, 2, 4.
  - Copper deposits of the Mount Wrangell region, Mendenhall and Schrader, 2.
  - Copper River country, Abercrombie, 1.
  - Deposition of ores from an igneous magma, Stevenson (R.), 3.
  - Economic developments in southeastern Alaska, Wright (F. E. and C. W.), 1.
  - Fairhaven gold placers, Moffit, 3.
  - Geology and mineral resources of Copper River district, Schrader and Spencer, 1.
  - Geology of copper deposits, Stevens (B.), 1.
  - Geology of Copper River region, Mendenhall, 8.
  - Geology of the Klondike, Mendenhall, 3.
  - Geology of the Treadwell ore deposits, Spencer (A. C.), 11.
  - Glenn Creek gold mining district, Collier, 3.
  - Gold deposits of Shumagin Islands, Martin (G. C.), 13.
  - Gold mining in Alaska, Furman, 1.
  - Gold mining in Arctic America, Penrose, 1.
  - Gold mining in Klondike, Miers, 2.
  - Gold placers of Fortymile, Birch Creek, and Fairbanks regions, Prindle, 2.
  - Gold placers of the Fairbanks district, Prindle, 1.
  - Gold placers of Turnagain arm, Moffit, 4.

Economic geology—Continued.
- *Alaska*—Continued.
  - Gold production of North America. Lindgren, 16.
  - Gold production of North America. Spurr, 13.
  - Gold sands of Cape Nome. Queneau, 1.
  - Guldforekomsterne i Alaska og tilgrænsende strœg. Kolderup, 1.
  - Juneau gold belt. Spencer (A. C.), 9.
  - Kayak coal and oil fields. Stoess, 1.
  - Kotzebue placer-gold field. Moffit, 2.
  - Magmatic origin of vein-forming waters in southeastern Alaska. Spencer (A. C.), 17.
  - Methods and costs of gravel and placer mining in Alaska. Purington, 8, 9.
  - Mineral resources of Alaska in 1904. Brooks, 11.
  - Mineral resources of southeastern Alaska. Brewer (W. M.), 12.
  - Mineral resources of Mount Wrangell district. Mendenhall and Schrader, 1.
  - Mining at the Alaska Treadwell. Kinzie, 1.
  - Nome gold region. Schrader and Brooks, 1.
  - Notes on Nome. Rickard (F.), 1.
  - Occurrence of cassiterite. Brooks, 1.
  - Occurrence of stream tin. Brooks, 2.
  - Ore formation on Prince of Wales Island. Thomae, 1.
  - Outlook for coal-mining in Alaska. Brooks, 14.
  - Petroleum fields of Alaska. Martin (G. C.), 3, 14.
  - Petroleum fields of Pacific coast. Martin (G. C.), 11.
  - Placer mining in Alaska. Brooks, 7, 9, 12.
  - Porcupine placer mining district. Wright (C. W.), 1, 2.
  - Preliminary report on the Ketchikan mining district. Brooks, 4.
  - Rampart placer region. Prindle and Hess, 1.
  - Reconnaissance from Fort Hamlin to Kotzebue Sound. Mendenhall, 2.
  - Reconnaissance in Alaska. Schrader, 3.
  - Reconnaissance in Norton Bay region. Mendenhall, 1.
  - Reconnaissance of northwestern portion of Seward Peninsula. Collier, 1.
  - Reconnaissance of the Cape Nome and adjacent gold fields of Seward Peninsula. Brooks and others, 1.
  - Stream tin in Alaska. Brooks, 8.
  - Tin deposits of the York region. Collier, 7, 8.
  - Tin in Alaska. Bell, 2.
  - Tin in the York region. Collier, 5.
  - Tin deposits of York region. Rickard (E.), 1.
  - Tin ledges in Alaska. Bell (R. N.), 1.
  - Treadwell group of mines. Kinzie, 2.

Economic geology—Continued.
- *Alaska*—Continued.
  - Treadwell ore deposits. Spencer (A. C.), 14.
  - Yukon gold fields. Miers, 1.
- *Arizona.*
  - Bisbee folio. Ransome, 14.
  - Bradshaw Mountains folio. Jaggar and Palache, 1.
  - Cement investigations in Arizona. Duryee, 1.
  - Clifton folio. Lindgren, 28.
  - Copper deposits of Bisbee. Ransome, 7, 8.
  - Copper deposits at Clifton. Lindgren, 12, 15.
  - Copper deposits of Clifton-Morenci district. Lindgren, 29.
  - Copper deposits of the Kaibab Plateau. Jennings (E. P.), 1.
  - Copper deposits of the Kaibab Plateau. Lunt, 1.
  - Copper in the Red Beds of the Colorado Plateau region. Emmons (S. F.), 20.
  - Deer Creek coal field. Campbell (M. R.), 16.
  - Diatom-earth in Arizona. Blake (W. P.), 10.
  - Genesis of copper deposits of Clifton-Morenci. Lindgren, 22.
  - Geology and copper deposits of Bisbee. Ransome, 10.
  - Geology and ore deposits of the Bisbee quadrangle. Ransome, 11.
  - Geology and vein phenomena of Arizona. Comstock (T. B.), 1.
  - Geology of Cochise mining district. Franke, 1.
  - Geology of Fort Apache region. Reagan, 3.
  - Geology of Globe copper district. Ransome, 6.
  - Geology of Galiuro Mountains. Blake (W. P.), 5.
  - Geology of Mineral Creek district. Gowling, 1.
  - Globe folio. Ransome, 13.
  - Gold deposits of Arizona. Pratt, 5.
  - Gold production of North America. Lindgren, 16.
  - Gypsum deposits in Arizona. Blake (W. P.), 14.
  - Limestone-granite contact deposits of Washington Camp. Crosby, 16.
  - Ore in anticlinals. Lakes, 71.
  - Planet copper mines. McCarn, 1.
  - Recent discoveries in Arizona. Burgess, 2.
  - Re-formed copper ores. Goodwin, 1.
  - Secondary enrichment. Probert, 1.
  - Silver Bell Mountains. Barney, 1.
  - Tombstone and its mines. Blake (W. P.), 8, 12.
  - Tombstone mining district. Church, 1.
  - Tungsten deposits in Arizona. Rickard (F.), 3.

Economic geology—Continued.

- *Arizona*—Continued.
  - Underground waters of Arizona, Skinner, 1.
  - Verde mining district, Miller (G. W.), 1.
- ***Arkansas.***
  - Arkansas bauxite deposits, Hayes (C. W.), 2.
  - Arkansas-Indian Territory coal field, Bache, 1.
  - Arkansas roofing slates, Dale, 11.
  - Asphalt deposits of Pike County, Hayes (C. W.), 4, 14.
  - Bauxite in Arkansas, Berger, 1.
  - Cement materials and industry of the United States, Eckel, 34.
  - Chalk of southwestern Arkansas, Taff, 5.
  - Coal fields of Arkansas and Indian Territory, Scholz, 2.
  - Coal mining in Arkansas, Crane, 7.
  - Fayetteville folio, Adams and Ulrich, 1.
  - Gisements de minerais de zinc, Demaret, 1.
  - Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
  - Lead and zinc deposits of Ozark region, Bain, 2.
  - Missouri and Arkansas zinc mines, Branner, 3.
  - Missouri and Arkansas zinc mines, Hedburg, 1.
  - Missouri and Arkansas zinc mines, Nichols (H. W.), 2.
  - Phosphate deposits, Brown (L. P.), 1.
  - Portland-cement materials of southwestern Arkansas, Fitzhugh, 1.
  - Phosphate rocks of Arkansas, Branner and Newsom, 1.
  - Report of superintendent of Hot Springs Reservation, Eisele, 1.
  - Southwestern coal field, Taff, 4.
  - Zinc and lead deposits of Arkansas, Adams (G. I.), 12, 15.
  - Zinc and lead deposits of north Arkansas, Branner, 2.
  - Zinc-lead deposits of southwest Arkansas, Phillips (W. B.), 3.
- *California.*
  - Borax deposits of eastern California, Campbell (M. R.), 12.
  - California type of auriferous deposit, Hershey, 7.
  - Cement materials and industry of the United States, Eckel, 34.
  - Coal fields of Pacific coast, Smith (G. O), 6.
  - Composition and occurrence of petroleum, Mabery, 3.
  - Contact-metamorphic deposits in the Sierra Nevada Mountains, Turner, 13.
  - Copper deposits of Redding region, Diller, 13.
  - Copper region of northern California, Diller, 5, 6.
  - Cretaceous auriferous conglomerate of Siskiyou County, Turner, 12.

Economic geology—Continued.

- *California*—Continued.
  - Desert dry lakes of California, Bailey (G. E.), 1.
  - Dredging in Oroville, Knox, 1.
  - Formation of bonanzas in upper portions of gold veins, Rickard (T. A.), 3.
  - Genesis of ore deposits at the Royal mine, Forstner, 1.
  - Geological section of the Coast ranges, Osmont, 1.
  - Geology of district west of Redding, O'Brien (M. E.), 1.
  - Geology of Nevada and adjacent portions of California, Spurr, 6.
  - Geology of Salinas Valley, Nutter, 1.
  - Gisements des minerais de mercure, Demaret, 2.
  - Gold production of North America, Lindgren, 16.
  - Greenback copper mine, Turner, 6.
  - Gypsum deposits in California, Fairbanks, 6.
  - Industrie du pétrole en Californie, Heurteau, 2.
  - Iron ores of the Redding quadrangle, Diller, 14.
  - Les anciens chenaux aurifères de Californie, Bordeaux, 1.
  - Limestone of the Redding district, Diller, 15.
  - Magnesite and its uses, Spinks, 1.
  - Mineral resources of the Indian Valley region, Diller, 19.
  - Mineral resources of the Redding quadrangle, Diller, 16.
  - Mother lode gold deposits, Prichard (W. R.), 1.
  - Mother lode gold deposits, Turner, 14.
  - Mother lode in Tuolumne County, Storms, 3.
  - Natronsaltpeter in Californien, Ochsenius, 2.
  - Neocene rivers of the Sierra Nevada, Lindgren, 10.
  - Occurrence of platinum, Day (D. T.), 1.
  - Oil fields of California, Lakes, 10.
  - Ore deposits of Shasta County, Anderson (F. M.), 4.
  - Origin and occurrence of petroleum, Cooper (A. S.), 1.
  - Petroleum fields of California, Eldridge, 4.
  - Petroleum in California, Claypole, 3.
  - Petroleum in California, Prutzman, 1.
  - Petroleum industry of Europe and America, Otsuka, 1.
  - Quicksilver, Haverstock, 1.
  - Quicksilver deposits of California, Forstner, 2.
  - Reconnaissance of borax deposits of Death Valley and Mohave Desert, Campbell (M. R.), 4.
  - Remarkable salt deposit, Holder, 1.

Economic geology—Continued.
  California—Continued.
    Roofing slate of igneous origin, Eckel, 27.
    Salt industry in Utah and California, Eckel, 26.
    San Luis folio, Fairbanks, 7.
    Slate deposits of California and Utah, Eckel, 24.
    Structural features of California gold belt, Storms, 1.
  Canada.
    Albert shale deposits, Ells (R. W.), 13.
    Alberta coal field, Armstrong, 1.
    Arsenic in Ontario, Wells (J. W.), 1.
    Artesian borings, surface deposits, and ancient beaches in Ontario, Chalmers, 5.
    Artesian well in the Klondike, Tyrrell, 2.
    Artesian wells, paleontology, Ami, 22.
    Asbest in Canada, Cirkel, 1.
    Asbestos, Cirkel, 3.
    Asbestus, Ells, 10.
    Atlin mining district, Gwillim, 1.
    Auriferous deposits of Vancouver Island, Watson (R. L.), 1.
    Bankhead coal mines, Henretta, 1.
    Bedded leads in relation to mining policy, Woodman, 3.
    Bed rock of the Gilbert River gold fields, Dresser, 14.
    Blairmore-Frank coal fields, Leach (W. W.), 2.
    Borings for natural gas, petroleum, and water, Chalmers, 4.
    Bornite ores of British Columbia and Yukon territory, Brewer, 16.
    Boston Township iron range, Miller (W. G.), 15.
    Boundary Creek district, British Columbia, Brock, 1, 3.
    British Columbia, Boundary mining district, Brewer (W. M.), 8.
    British Columbia coal fields, Brewer (W. M.), 6.
    British Columbia iron and coal, Brewer (W. M.), 2.
    Bruce mines district, Ingall, 8.
    Building stones of Nova Scotia, Gilpin, 2.
    Bulletin on apatite, Ells (R. W.), 19.
    Canadian graphite, Brumell, 1.
    Carboniferous basin in New Brunswick, Ells (R. W.), 3.
    Carboniferous system of New Brunswick, Bailey (L. W.), 8.
    Cascade and Costigan coal basins, Dowling, 11.
    Cement industry of Ontario, Gillespie, 1.
    Characteristics of Atlin gold field, Gwillim, 2.
    Charlotte County, Ells (R. W.), 17.
    Cinnabar-bearing rocks of British Columbia, Monckton, 2.

Economic geology—Continued.
  Canada—Continued.
    Clays and shales of Manitoba, Wells (J. W.), 2.
    Coal basins in Rocky Mountains, Dowling, 7.
    Coal Creek colliery of Crows Nest Pass, Corless, 1.
    Coal field of Souris River, Dowling, 9.
    Coal fields of Canada, Denis, 1.
    Coal fields of Cook Inlet, Alaska, and Pacific coast, Kirsopp, 1.
    Coal fields of Crows Nest Pass, Jacobs, 2.
    Coal fields of Crows Nest Pass branch of Canadian Pacific Railway, Brewer (W. M.), 9.
    Coal fields of New Brunswick, Poole, 2.
    Coal in Alberta, Rickert, 1.
    Coal mining in the Crows Nest, McEvoy, 2.
    Coal mining in the Northwest Territories, Smith (F. B.), 1.
    Coal problem in New Brunswick, Poole, 3.
    Coal prospects of New Brunswick, Poole, 8.
    Cobalt-nickel arsenides and silver, Miller (W. G.), 11.
    Cobalt-nickel arsenides and silver deposits of Temiskaming, Miller (W. G.), 13.
    Cobalt-nickel arsenides and silver in Ontario, Miller (W. G.), 8.
    Composition and occurrence of petroleum, Mabery, 3.
    Copper-bearing rocks in Quebec, Dresser, 7, 10, 12, 13.
    Copper-bearing rocks of Sherbrooke district, Dresser, 15.
    Copper claims of Aspen Grove and Aberdeen Camp, Johnston (R. A. A.), 2.
    Copper deposits of Aspen Grove Camp, Similkameen, Bailey (F.), 1.
    Copper deposits of Mt. Sicker, Musgrave, 1.
    Copper Mountain, Catherinet, 1.
    Copper ores in Nova Scotia, New Brunswick, and Quebec, Ells (R. W.), 22.
    Correction in classification of gold formation, Hille, 4.
    Corundum and emery, Fuller (H. T.), 1.
    Corundum in Ontario, Baker, 1.
    Corundum in Ontario, Barlow, 10.
    Corundum in Ontario, Kerr (D. G.), 1.
    Counties of Cumberland, Hants, Kings, and Annapolis, Fletcher, 6.
    Crows Nest coal fields, Leach, (W. W.), 1.
    Crows Nest Pass coal field, Brewer (W. M.), 7.
    Duncan Creek mining district, Keele, 1.
    Eastern Assiniboia and southern Manitoba, Dowling, 4.

Economic geology—Continued.

Canada—Continued.

- Eastern Ontario, Miller (W. G.), 6.
- Eastern Ontario gold belt, Miller (W. G.), 4.
- Economic minerals in New Brunswick, Bailey (L. W.), 11.
- Economic resources of Moose River Basin, Bell (J. M.), 2.
- Eisenerzlagerstätten am Lake Superior, Macco, 1.
- Exploration of the Ontario iron ranges, Willmott, 4.
- Fossiliferous rocks of southwest Ontario, Parks, 4.
- Genesis of Animikie iron range, Hille, 3.
- Genesis of gold deposits of Baskerville, Atkin, 1.
- Geological exploration in district of White Bay, Howley, 1.
- Geological sketch of the Bankhead coal field, Turnbull, 1.
- Geology and mining of Vancouver Island, Sutton, 1.
- Geology and natural resources of Ottawa and vicinity, Ells (R. W.), 7.
- Geology of Boisdale Hills anticline, Boright, 1.
- Geology of Bruce Mines district, Ingall, 6.
- Geology of district from Lake Timiskaming northward, Parks, 8.
- Geology of Province of Quebec, Ells (R. W.), 8.
- Geology of Renfrew, Addington, Frontenac, Lanark, and Carleton Counties, Ells (R. W.), 20.
- Geology of the Moose River gold district, Woodman, 4.
- Geology of the Sudbury district, Coleman, 20.
- Geology of the Sudbury district, Hixon, 1.
- Geology of the Three Rivers map sheet, Ells (R. W.), 2.
- Geology of Vancouver Island, Haycock, 3.
- Geology of Vancouver Island, Webster, 1.
- Gîtes aurifères du Klondike, Bel, 2.
- Gold-bearing alluvions of Quebec, Chalmers, 2.
- Gold fields of Nova Scotia, Faribault, 3, 4.
- Gold mining in Arctic America, Penrose, 1.
- Gold mining in Klondike, Miers, 2.
- Gold near Lake Superior, Lane, 35.
- Gold occurrences on Lightning Creek, Atkin, 2.
- Gold production of North America, Lindgren, 16.
- Gold production of North America, Miller (W. G.), 10.
- Gold ores of western Ontario, Brent, 1.
- Graham Island coal, Blakemore, 3.

Economic geology—Continued.

Canada—Continued.

- Graphite in Canada, Ells (R. W.), 18.
- Hydraulic cements in Manitoba, Wells (J. W.), 3.
- Industries minière et metallurge en Colombie britannique, Vicaire, 1.
- Iron-bearing rocks in Ontario, Coleman, 15.
- Iron-bearing rocks of Nastapokan Islands, Mickle, 1.
- Iron belt west of Hutton, Culbert, 1.
- Iron-ore deposits along Kingston and Pembroke Railway in eastern Ontario, Ingall, 4.
- Iron-ore deposits near Kitchener, Blakemore, 2.
- Iron-ore deposits of western Ontario, Hille, 1.
- Iron-ore fields of Ontario, Miller (W. G.), 3.
- Iron ores of Nipissing district, Miller (W. G.), 2.
- Iron ranges of northern Ontario, Miller (W. G.), 9.
- Iron ranges of northwestern Ontario, Coleman, 12.
- Iron ranges of the Lower Huronian, Coleman, 4.
- Is there coal under Prince Edward Island?, Poole, 11.
- Klondike district, McConnell, 4.
- Klondike gold fields, McConnell, 5.
- Kluana mining district, McConnell, 6.
- Lardeau district, Brock, 7.
- Lardeau mining district, Brock, 8.
- Limestone of Philipsburg Railway and Coal Company, Donald, 1.
- Limestones and lime industry of Manitoba, Wells (J. W.), 5.
- Limestones of Ontario, Miller (W. G.), 14.
- Loon Lake iron-bearing district, Smith (W. N.), 1.
- McKee Creek, Atlin mining division, British Columbia, Brewer (W. M.), 5.
- Magnetic iron sand of the St. Lawrence, Obalski, 1.
- Manganese mining in Nova Scotia, Jennison, 1.
- Marl deposits, Ells (R. W.), 6.
- Mica, Cirkel, 4.
- Mica and the mica industry, Colles, 1.
- Mica deposits, Cirkel, 2.
- Mica deposits of Canada, Ells (R. W.), 21.
- Michipicoten gold belt, Clarke (C. H.), 1.
- Michipicoten iron ranges, Coleman and Willmott, 2.
- Michipicoten iron region, Coleman and Willmott, 1.
- Mineral resources of Ontario, Miller (W. G.), 12.
- Mineral resources of Vancouver Island, Brewer (W. M.), 14.
- Mineral statistics, Ingall, 1.

Economic geology—Continued.
Canada—Continued.
Minerals of Nova Scotia, Gilpin, 1.
Mines of Ontario, Carter (W. E. H.), 1.
Mining developments in eastern Ontario, Thomas, 1.
Mining districts near Kamloops Lake, Monckton, 1.
Mining in the Rossland district, Campbell (C. M.), 1.
Mining industry and mineral resources of British Columbia, Brewer (W. M.), 3.
Modes of occurrence of mineral albertite, Bailey (L. W.), 4.
Molybdenite, Wells, 2.
Molybdenum and tungsten, Johnston, 1.
Moose Mountain iron range, Leith, 6.
Mount Sicker mining district, Brewer (W. M.), 13.
Native gold in igneous rocks, Brock, 4.
New Brunswick, Bailey (L. W.), 5.
New mineral area in Ontario, Hardman, 1.
Nickel and copper deposits of Sudbury, Barlow, 8.
Nicola coal basin, Ells (R. W.), 23.
Nictaux iron field, Weatherbe, 1.
Northern nickel range, Coleman, 18.
Northern part of Nova Scotia, Fletcher, 5.
Notes on geology and ore deposits of southeastern British Columbia, Corless, 2.
Notes on mica, Corkill, 1.
Notes on molybdenite, Willimott, 2.
Notes on the life history of coal seams, Gwillim, 5.
Notes on western coals, Gwillim, 4.
Nova Scotia coals, Gilpin, 3.
Nova Scotia gold fields, Faribault, 1, 2.
Occurrence of hematite, Mills, 2.
Occurrence of scheelite, Atkin, 1.
Oil fields of Gaspe, Ells (R. W.), 12.
Ore deposits of Boundary Creek district, Brock, 2.
Ore deposits of Copper Mountain, Scott (O. N.), 1.
Ore deposits of Rossland, Kirby, 2.
Ore deposits of Rossland, MacDonald, 1.
Ore deposits of Sudbury, Dickson, 4.
Ore quarrying in the Boundary district, British Columbia, Jacobs, 1.
Origin and relations of auriferous veins of Algoma (western Ontario), Crosby, 4.
Peat in Canada, Chalmers, 7.
Petrography of Belvidere Mountain deposits, Marsters, 3.
Petroleum and natural gas [in Ontario], Corkill, 2.
Pictou coal field, Poole, 10.
Pioneer work in Crows Nest coal area, Blakemore, 1.
Platinum in British Columbia, Brock, 6.

Economic geology—Continued.
Canada—Continued.
Poplar Creek and other camps of the Lardeau district, Brock, 5.
Port Huron oil field, Gordon (C. H.), 2.
Possible occurrence of coal area beneath Neo-Carboniferous, Nova Scotia, Ami, 29, 31.
Potter's clay at Middle Musquodoboit, Mason, 1.
Production of copper in Boundary district, Ledoux, 2.
Report on the Lardeau mining district, Robertson, 3.
Report on the Trout Lake Mining division, Robertson, 2.
Report on the valley of the Flathead River, Robertson, 1.
Section of mineral statistics and mines, annual report, Ingall, 2.
Section of mines, annual report, Ingall, 3, 5, 7, 9.
Stratigraphy of the Cascade coal basin, Dowling, 10.
Sudbury district, Barlow, 3.
Sudbury mining district, Barlow, 6.
Sudbury nickel-bearing eruptive, Coleman, 19.
Sudbury nickel deposits, Coleman, 14.
Sulphide ore bodies of Sudbury region, Silver, 1.
Surveys and explorations in Nova Scotia, Fletcher, 3.
Temagami district, Barlow, 7.
Texada Island, Brewer (W. M.), 1.
Tripolite deposits of Fitzgerald Lake, Crosby, 1.
Turtle Mountain, Manitoba, Dowling, 5.
Types of iron-bearing rocks in Ontario, Coleman, 7.
Vermilion River placers, Coleman, 3.
Voyage minier au nord-ouest Canadien, Bel, 1.
West Gore antimony deposits, Asquith, 1.
White Horse copper camp, Brewer (W. M.), 15.
White Horse district, Brewer (W. M.), 11.
White Horse mining district, Yukon Territory, Brewer (W. M.), 4.
Workable coals of Nova Scotia, Fletcher, 4.
Yukon district, McConnell, 2.
Yukon gold fields, Miers, 1.
Colorado.
Across the San Juan Mountains, Rickard (T. A.), 7.
Aguilar coal and oil district, Lakes, 39.
American Nettie, Lakes, 1.
Anthracite situation in Colorado, Lakes, 81.
Barela Mesa coal field, McLaughlin, 1.
Basaltic zones as guides to ore deposition, Stevens (E. A.), 2.
Book Cliff coal mines, Lakes, 66.
Boulder oil field, Fenneman, 4.

Economic geology—Continued.
Colorado—Continued.
Building and monumental stones, Lakes, 12.
Building stones, Lakes, 13.
Camp Bird gold mine, Titcomb, 1.
Camp Bird mine, Ouray, Purington, 3.
Cave ore deposits, Lakes, 4.
Cement materials and industry of the United States, Eckel, 34.
Coal along the eastern foothills, Lakes, 82.
Coal and asphalt deposits along Moffat railway, Lakes, 60.
Coal and mineral resources of Routt County, Parsons and Liddell, 1.
Coal field between Ralston Creek and Boulder, Lakes, 86.
Coal fields of Colorado, Lakes, 62, 80.
Coal mines of Huerfano County, Lakes, 99.
Coals of southern Colorado, Lakes, 85.
Colorado Central lode, Foster, 1.
Colorado: Report of State bureau of mines, Lee (H. A.), 1.
Copper deposits at Pearl, Spencer (A. C.), 7.
Copper mining in the Pearl district, Read, 4.
Creede mining camp, Lakes, 50.
Cripple Creek volcano, Rickard (T. A.), 1.
Curtis coal mine, Lakes, 3.
District aurifère de Cripple Creek, Ritter, 1.
Economic geology, La Plata folio, Purington, 1.
Economic geology of the Silverton quadrangle, Ransome, 1.
Example of localization of rich ore, Rickard (T. A.), 6.
Florence oil field, Fenneman, 9.
Formation of bonanzas in upper portions of gold veins, Rickard (T. A.), 3.
Formation of Cripple Creek mining district, Moore (C. J.), 1.
Formation of Leadville mining district, Moore (C. J.), 2.
Genesis of ore deposits in Boulder County, Bagg, 2.
Geological resurvey of the Cripple Creek district, Lindgren and Ransome, 1, 2.
Geological structure of Camp Bird vein, Purington, 5.
Geology along the Animas River, Lakes, 25.
Geology and coal deposits of the Spanish Peaks district, Lakes, 83.
Geology and underground water resources of the central Great Plains, Darton, 18.
Geology of the Needle Mountains quadrangle, Irving and Emmons, 1.
Geology of the oil fields of Colorado, Lakes, 15.

Economic geology—Continued.
Colorado—Continued.
Geology of Virginius mine, Purington, 7.
Gisements de minerais de zinc, Demaret, 1.
Gold deposits of Plomo, Gunther, 1.
Gold production of North America, Austin, 5.
Gold production of North America, Lindgren, 16.
Grand River coal field, Lakes, 87.
Gypsum deposits in Colorado, Lakes, 61.
Influence of country rock on mineral veins, Weed, 6.
La Plata coal field, Lakes, 84.
Leadville district, Warwick, 2.
Lodes of Cripple Creek, Rickard (T. A.), 8, 12.
Mineralogical mistake, Van Diest, 1.
Mines and ore deposits of the Rosita and Silver Cliff mining district, Lakes, 53.
Mines of Ouray County, Downer and De Gou, 1.
Neglected mine and Near-by properties, Emmons (W. H.), 1.
Occurrence of ore at Red Mountain, Schwarz, 2.
Oil field of Mesa and Rio Blanco counties, Lakes, 24.
Oil in Colorado, Lakes, 21.
Oil situation in Colorado, Lakes, 48.
Oil springs of Rio Blanco County, Lakes, 17.
Ore deposits in Georgetown mining district, Spurr and Garrey, 1.
Ore deposits near Lake City, Irving, 7.
Ore deposits of Colorado, Lakes, 73.
Ore deposits of Rico Mountains, Ransome, 3.
Ore deposits of the American-Nettie mine, Ouray, Downer, 1.
Ore deposits of the Ouray district, Irving, 6, 9.
Ore horizons in San Juan Mountains, Purington, 11.
Ore occurrence at Leadville, Robbins, 1.
Plastic dike near Ouray, Ransome, 2.
Prospecting for oil, Lakes, 11, 16.
Peculiar ore deposit, Colburn, 1.
Redcliff ore deposits, Lakes, 44.
Report State Bureau of Mines, Lee (H. A.), 1.
Rocky Mountain coal fields, Storrs (L. S.), 1.
Secondary enrichment at Cripple Creek, Weed, 21.
Silver Lake mine, Lakes, 47.
Silverton folio, Ransome, 16.
Soils of Colorado, Lakes, 40.
South Park coal field, Lakes, 89.
Spanish Peaks folio, Hills, 1.
Structure of Boulder oil field, Fenneman, 5.
Summit County placers, Lakes, 43.

Economic geology—Continued.
Colorado—Continued.
Telluride ores of Cripple Creek and Kalgoorlie, Rickard (T. A.), 2.
Tellurium veins in La Plata Mountains, Austin, 1.
Tercio and Cuatro mines, Hosea, 1.
Tercio coal mining district, Plumb, 1.
Veins of Boulder and Kalgoorlie, Rickard (T. A.), 11.
Veins of Boulder County, Bagg, 3.
Yampa coal fields, Lakes, 65, 88.
Connecticut.
Cement materials and industry of the United States, Eckel, 34.
Clays of Connecticut, Loughlin, 1.
Clays of the United States, Ries, 6.
Hematite deposits of New York, Eckel, 30.
Limonite deposits of New York and New England, Eckel, 36.
Tungsten mine at Trumbull, Hobbs, 5.
Tungsten mining at Trumbull, Hobbs, 16.
Delaware.
Clays of the United States, Ries, 6.
District of Columbia.
Clays of the United States, Ries, 6.
Washington folio, Darton and Keith, 1.
Florida.
Cement materials and industry of the United States, Eckel, 3.
Clays of the United States, Ries, 6.
Fuller's earth deposits of Florida and Georgia, Vaughan 18.
Fuller's earth of Georgia and Florida, Vaughan, 12.
Gypsum deposits in Florida, Day, 4.
Phosphate deposits, Brown (L. P.), 1.
Georgia.
Bauxite deposits of Georgia, Watson (T. L.), 12.
Cement materials and industry of the United States, Eckel, 34.
Clays of the United States, Ries, 6.
Coal deposits of Georgia, McCallie, 9.
Copper deposits in Georgia, Weed, 26.
Dahlonega gold district, Eckel, 15.
Dahlonega mining district, Eckel, 21.
Fuller's earth deposits of Florida and Georgia, Vaughan, 18.
Fuller's earth of Georgia and Florida, Vaughan, 12.
Geologic relations of the iron ores in the Cartersville district, Hayes (C. W.), 1.
Georgia bauxite deposits, Watson (T. L.), 2.
Gold and pyrite deposits of the Dahlonega district, Eckel, 16.
Gold mining in McDuffie County, Fluker, 1.
Gold mining in McDuffie County, Ga., Fluker, 2.
Granites and gneisses of Georgia, Watson (T. L.), 8.

Economic geology—Continued.
Georgia—Continued.
Iron ores of Cartersville district, Hayes and Eckel, 1.
Manganese ore deposits of Georgia, Catlett, 2.
Manganese ore deposits of Georgia, Watson (T. L.), 9.
Manganese ores of the Cartersville district, Hayes (C. W.), 11.
Mineral resources of Georgia, McCallie, 2.
Ocher deposits in Cartersville district, Hayes and Eckel, 2.
Ocher deposits of Bartow County, Watson (T. L.), 10.
Roads and road-building materials of Georgia, McCallie, 3.
Rome folio, Hayes (C. W.), 5.
Seminole copper deposit, Watson (T. L.), 11.
Southern Appalachian coal field, Hayes (C. W.), 7.
Vein structure at Reynolds mine, Collins (G. E.), 1.
Hawaiian Islands.
Geology of Hawaiian Islands, Branner, 6.
Idaho.
Artesian basins in Idaho and Oregon, Russell, 9.
Bellevue mining district, Lakes, 45.
Butte copper veins, Winchell (H. V.), 4.
Cœur d'Alene district, Ransome, 16.
Facts about Thunder Mountain, Bell (R.), 5.
Geological reconnaissance across the Bitterroot Range and Clearwater Mountains, Lindgren, 21.
Geology and mineral resources, Bell (R. N.), 5.
Geology and water resources of Nez Perces County, Part II, Russell, 2.
Geology of Thunder Mountain and central Idaho, Bell (R.), 4.
Gold production of North America, Lindgren, 16.
Idaho mining districts, Lakes, 18.
Mining industry of Cœur d'Alenes, Finlay (J. R.), 1–3.
Mining industry of Idaho, Bell (R. N.), 3.
Nampa folio, Lindgren and Drake, 1.
Ore deposits of Cœur d'Alene district, Ransome, 17.
Outline of Idaho geology and of principal ore deposits of Lemhi and Custer counties, Idaho, Bell (R.), 1.
Silver City folio, Lindgren and Drake, 2.
Thunder Mountain, L'Hame, 1.
Thunder Mountain and Mackay, Idaho, Bell (R.), 2.
Thunder Mountain district, L'Hame, 2.
Illinois.
Cement materials and industry of the United States, Eckel, 34.

Economic geology—Continued.
Illinois—Continued.
Chicago folio, Alden, 1.
Clays of the United States, Ries, 6.
Coal field of Indiana and Illinois, Fuller and Ashley, 2.
Eastern interior coal field, Ashley, 1.
Fluorspar and zinc mines of Kentucky, Harwood, 1.
Fluorspar deposits of Kentucky-Illinois district, Bain, 12.
Fluorspar deposits of southern Illinois, Bain, 6, 19.
Fluorspar mines of Kentucky and Illinois, Burk, 1.
Geological section across northern Illinois, Udden (Johan A.), 1.
Geological section in southern Illinois, Nickles, 2.
Lead and zinc deposits of Illinois, Bain, 11.
Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
Patoka folio, Fuller and Clapp, 2.
Stone industry in vicinity of Chicago, Alden, 2.
Zinc and lead deposits of northwestern Illinois, Bain, 14.
Indiana.
Asphalt, oil, and gas in southwestern Indiana, Fuller (M. L.), 5.
Cement materials and industry of the United States, Eckel, 34.
Clays of Indiana, Blatchley, 8.
Clays of the United States, Ries, 6.
Coal field of Indiana and Illinois, Fuller and Ashley, 2.
Ditney folio, Fuller and Ashley, 1.
Eastern interior coal field, Ashley, 1.
Estimation of the silica in the Bedford limestone, Knight (N.), 7.
Lakes of Indiana and their marl deposits, Blatchley and Ashley, 1.
Lime industry in Indiana, Blatchley, 7.
Lower Carboniferous area of southern Indiana, Ashley, 2.
Medicinal properties and uses of Indiana mineral waters, Hessler, 1.
Mineral waters of Indiana, Blatchley, 3.
Oolitic stone for Portland cement, Blatchley, 1.
Oolitic limestone industry, Siebenthal, 3.
Patoka folio, Fuller and Clapp, 2.
Petroleum industry in Indiana, Blatchley, 2, 4, 6.
Report of natural gas supervisor, Kinney, 1, 2.
Report of natural gas supervisor, Leach (J. C.), 1, 2.
Silver Creek hydraulic limestone, Siebenthal, 2.
Indian Territory.
Arkansas-Indian Territory coal field, Bache, 1.
Asphalt lands of Indian Territory, Taff, 12.

Economic geology—Continued.
Indian Territory—Continued.
Asphalt refining, Crane, 3.
Atoka folio, Taff, 3.
Calgate folio, Taff, 2.
Coal fields of Arkansas and Indian Territory, Scholz, 1.
Coal lands of Indian Territory, Taff, 7-11.
Coal mining in Indian Territory, Crane, 5.
Coal work in Indian Territory, Taff, 16.
Geology of Muscogee oil fields, Taff and Shaler, 1.
Oil and gas fields of western interior and Gulf coast, Adams (G. I.), 2.
Portland-cement resources of Indian Territory, Taff, 14.
Southwestern coal field, Taff, 4.
Tahlequah folio, Taff, 17.
Tishomingo folio, Taff, 6.
Iowa.
Analyses of Iowa building stones, Knight (N.), 2.
Artesian wells in Iowa, Calvin, 9.
Cement and cement materials of Iowa, Eckel and Bain, 1.
Geology and geological resources of Iowa, Calvin, 3, 7.
Geology of Benton County, Savage, 7.
Geology of Cedar County, Norton, 1.
Geology of Cherokee and Buena Vista counties, Macbride, 2.
Geology of Chickasaw County, Calvin, 11.
Geology of clays, Beyer and Williams, 2.
Geology of Clinton County, Udden (Jon A.), 1.
Geology of Emmet, Palo Alto, and Pocahontas counties, Macbride, 4.
Geology of Fayette County, Savage, 8.
Geology of Henry County, Savage, 1.
Geology of Howard County, Iowa, Calvin, 10.
Geology of Jasper County, Williams (I. A.), 1.
Geology of Jefferson County, Udden, 5.
Geology of Louisa County, Udden, 2.
Geology of Marion County, Miller (B. L.), 1.
Geology of Mills and Fremont counties, Udden, 8.
Geology of Mitchell County, Calvin, 12.
Geology of Monroe County, Iowa, Beyer and Young, 1.
Geology of Page County, Calvin, 1.
Geology of Pottawattamie County, Udden, 3.
Geology of Tama County, Savage, 3.
Geology of Wapello County, Leonard, 3.
Geology of Webster County, Wilder, 3.
Gisements de minerais de zinc, Demaret, 1.
Gypsum deposits in Iowa, Wilder, 6.
Gypsum of central Iowa, Wilder, 4.
Iowa's iron mine, Beyer, 2.

- **Economic geology**—Continued.
  - *Iowa*—Continued.
    - Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
    - Mineral production in 1901, Beyer, 1.
    - Mineral production in 1902, Beyer, 3.
    - Mineral production in 1904, Beyer, 4.
    - Occurrence of gold and other mineral products in Iowa, Calvin, 2.
    - Portland-cement resources of Iowa, Bain, 15.
    - Report of assistant State geologist, Leonard, 2.
    - Southwestern Iowa coal fields, Keyes, 22.
    - Technology of clays, Beyer and Williams, 1.
    - Tenth annual report of State geologist, Calvin, 5.
    - Tests of lithographic limestone of Mitchell County, Hoen, 1.
    - Western interior coal field, Bain, 3.
  - *Kansas.*
    - Americus limestone, Smith (A. J.), 1.
    - Atchison diamond-drill prospect hole, Langworthy, 1.
    - Cement materials and industry of the United States, Eckel, 34.
    - Clay industries of Independence quadrangle, Schrader and Haworth, 2.
    - Coal fields of Kansas, Crane, 4.
    - Composition of gas from a well at Dexter, McFarland, 1.
    - Cottonwood Falls folio, Prosser and Beede, 1.
    - Dakota Cretaceous of Kansas and Nebraska, Gould, 5.
    - Dexter nitrogen gas well, Haworth and McFarland, 1.
    - Economic geology of Iola and vicinity, Grimsley, 2.
    - Economic geology of the Iola quadrangle, Adams, Haworth, and Crane, 1.
    - Galena-Joplin lead and zinc district, Haworth, 1.
    - Geology and mining interests of Kansas, Haworth, 3.
    - Geology and underground water resources of the central Great Plains, Darton, 18.
    - Gisements de minerals de zinc, Demaret, 1.
    - Gold in Kansas, Lovewell, 2.
    - Gold in Kansas shales, Lovewell, 1.
    - Gypsum deposits in Kansas, Grimsley, 5.
    - Kansas coal mines of the Missouri Valley, Crane, 2.
    - Kansas coal mining, Crane, 1.
    - Kansas mines and minerals, Grimsley, 1.
    - Kansas petroleum, Bartow and McCollum, 1.
    - Lead and zinc deposits of the Joplin district, Smith (W. S. T.), 2.
    - Oil and gas in Kansas, Haworth, 4.

- **Economic geology**—Continued.
  - *Kansas*—Continued.
    - Oil and gas fields of western interior and Gulf coast, Adams (G. I.), 2.
    - Oil and gas of Independence quadrangle, Schrader and Haworth, 1.
    - Oil, gas, glass, etc., in Kansas, Grimsley, 1.
    - Origin of gypsum deposits, Sherwin, 2.
    - Ottawa gas wells, Yates (J. A.), 1.
    - Petroleum and natural gas, Haworth, 2.
    - Portland-cement resources of the Independence quadrangle, Haworth and Schrader, 1.
    - Springs of Kansas and Oklahoma, Gould, 3.
    - Tests for gold and silver in shales from western Kansas, Lindgren, 7, 8.
    - Western interior coal field, Bain, 3.
  - *Kentucky.*
    - Asphalt rock in Kentucky, Burk, 2.
    - Barboursville oil field, McCallie, 7.
    - Big Stone Gap coal field, Pultz, 1.
    - Clays of the United States, Ries, 6.
    - Cumberland Gap coal field, Ashley, 3, 4.
    - Eastern interior coal field, Ashley, 1.
    - Fluorspar and zinc mines of Kentucky, Harwood, 1.
    - Fluorspar deposits of Kentucky-Illinois district, Bain, 12.
    - Fluorspar mines of Kentucky and Illinois, Burk, 1.
    - Gisements de minerals de zinc, Demaret, 1.
    - Jellico coal field, Evans (N. N.), 2.
    - Lead and zinc bearing rocks of Kentucky, Miller (A. M.), 4.
    - Lead, zinc, and fluorspar deposits of western Kentucky, Smith (W. S. T.), 3.
    - Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich and Smith, 1.
    - Lithographic stone deposits of eastern Kentucky, Ulrich, 3.
    - Norton coals of Big Sandy Basin, Althouse, 1.
    - Oil and gas sands of Kentucky, Hoeing, 1.
    - Report of division of chemistry, Peter, 1.
    - Report on lands leased for oil and gas near Cannel City, Lane, 19.
    - Southern Appalachian coal field, Hayes (C. W.), 7.
    - Zinc in Crittenden County, Wheeler (G. D.), 1.
  - *Louisiana.*
    - Accumulation of petroleum, Hayes (C. W.), 8.
    - Cement materials and industry of the United States, Eckel, 34.
    - Geological horizon of petroleum, Fishback, 1.
    - Hills of Louisiana north of V. S. & P. Railroad, Lerch, 1.

Economic geology—Continued.
Louisiana—Continued.
Hills of Louisiana south of V. S. and P. Railroad, Lerch, 2.
Oil fields of the Texas-Louisiana gulf coast, Fenneman, 8.
Oil fields of Texas-Louisiana Gulf coastal plain, Hayes (C. W.), 13.
Oil fields of Texas-Louisiana Gulf coastal plain, Hayes and Kennedy, 1.
Oil in Louisiana, Harris, 4.
Preliminary report upon bluff and Mississippi alluvial lands of Louisiana, Clendenin, 2.
Preliminary report upon Florida parishes of east Louisiana, Clendenin, 1.
Salines of north Louisiana, Veatch, 1.
Southern oil fields, Hager, 1.
Subterranean waters of Louisiana, Harris, 3.
Sulphur deposits of Calcasieu Parish, Kerr, 1.
Underground waters of Louisiana, Harris, 6.
Volcanic origin of oil, Coste, 4.
Water supplies in Louisiana, Fuller (M. L.), 10.
Maine.
Clays of the United States, Ries, 6.
Geology of Perry Basin, Smith and White, 1.
Granite industry of Penobscot Bay quadrangle, Smith (G. O.), 17.
Mineral resources, Lee (L. A.), 1.
Molybdenite deposit in eastern Maine, Smith (G. O.), 16.
Quartz veins in Maine and Vermont, Smith (G. O.), 14.
Slate investigations during 1904, Dale, 8.
Water powers of Maine, Pressey, 3.
Maryland.
Bituminous coal fields of Maryland, White (D.), 7.
Cement materials and industry of the United States, Eckel, 34.
Clays of Maryland, Ries, 5.
Clays of the United States, Ries, 6.
Copper deposits of Appalachian States, Weed, 17.
Distribution and character of Maryland coal beds, Clark, Martin, and Rutledge, 1.
Geology of the Maryland coal district, Martin (G. C.), 16.
Gold veins near Great Falls, Weed, 35.
Mineral resources of Cecil County, Mathews, 1.
Mineral resources of Garrett County, Martin (G. C.), 2.
Slate investigations during 1904, Dale, 8.
Massachusetts.
Building stones of Boston, Crosby and Loughlin, 1.
Cement materials and industry of the United States, Eckel, 34.

Economic geology—Continued.
Massachusetts—Continued.
Clays of the United States, Ries, 6.
Hematite deposits of New York, Eckel, 30.
Limonite deposits of New York and New England, Eckel, 36.
Mexico.
Aguas subterraneas de Amozoc, Ordoñez, 12.
Cananea copper deposits, Weed, 12.
Cananea ore deposits, Weed, 23.
Cananea revisited, Hill (R. T.), 12.
Canteras de San Lorenzo Totolinga, Lazo and Ordoñez, 1.
Coal fields of Las Esperanzas, Ludlow, 1.
Coal mines at Las Esperanzas, Ries, 9.
Cobalt au Mexique, Caballero, 1.
Coking coal in Chihuahua, Phillips (W. B.), 13.
Copper deposits of San Jose, Kemp, 32.
Copper deposits in Sinaloa and Sonora, Rickard (F.), 2.
Criadero de fierro del Cerro de Mercado, Durango, Rangel, 1.
Criaderos argentíferos, Flores, 1.
Criaderos cupro-argentíferos en Tapalpa, Villafaña, 1.
Criaderos de fierro de la hacienda de Vaquerias, Villarello and Böse, 1.
Criaderos de mercurio de Chiquilistan, Villarello, 6.
Criaderos de petroleo de Pichucalco, Alcala, 1.
Distribución geográfica y geológica de los criaderos minerales, Aguilera, 1.
Estado de Tabasco, Laguerenne, 1.
Fierro de Tatatila, Veracruz, Capilla, 1.
Genesis de los yacimientos mercuriales de Palomas, Villarello, 1.
Geographic and geologic features, and their relation to the mineral products of Mexico, Hill (R. T.), 4.
Geographical and geological distribution of mineral deposits of Mexico, Aguilera, 3.
Geology of San Pedro district, Finlay (G. I.), 5.
Geology of Santo Domingo placer fields, Hill (R. T.), 15.
Geology of the Cananeas, Mathez, 1.
Geology of western Mexico, Farrington, 13.
Gold mines of the San Pedro district, Laird, 1.
Gold production of North America, Lindgren, 16.
Guanajuato mining district, Henrich, 1.
Guanajuato mining district, Hill (R. T.), 14.
Hostotipaquillo district, Cummings, 10
La industria minera, Ordoñez, 2.
Kupfererzlagerstätte in Nieder-Californien, Krusch, 1,

Economic geology—Continued.
Mexico—Continued.
Ligeros datos sobre los criaderos de Peñoles, Hijar, 1.
"Los Reyes" gold mines, Smith (A. H.), 1.
Mina Santa Francisca, Cook (E. H.), 1.
Minas "Santiago y Anexas," Villarello, 9.
Mineral de Angangueo, Ordoñez, 11.
Mineral zone of Santa Maria del Rio, Manzano, 1.
Mines and minerals of Guanajuato, Blake (W. P.), 7.
Mines in the states of Chihuahua, Sinaloa, and Sonora, Weed, 8.
Mines of Santa Eulalia, Aiken, 1.
Mining industry of Pachuca, Ordoñez, 3, 6.
Mining in Lower California, Lowry, 1.
Montezuma district, Clere, 1.
Occurrence of selenium with pyrite, Pearce, 1.
Onyx-marble deposits of Jimulco, Ordoñez, 4.
Ore deposits of Cananea, Austin, 1.
Ore deposits of Cananea, Hill (R. T.), 11.
Ore dêposits of La Cananea, Steel, 1.
Sahuayacan district, Bagg, 8.
San Alto tin deposits, Nevius, 3.
Santa Eulalia district, Hill (R. T.), 10.
Santa Eulalia mines, Lakes, 54.
Santa Eulalia mining district, Argall (P.), 1.
Santa Eulalia ore deposits, Argall (P.), 2.
Sierra Mojada and its ore deposits, Emmons (S. F.), 8.
Sierra Mojada and its ore deposits, Malcomson, 1.
Silver-bearing veins of Mexico, Halse, 1, 4, 5.
Silver-lead mines of Santa Eulalia, Cahill, 1.
Structure of ore-bearing veins in Mexico, Halse, 2.
Teoria quimica para explicar la formacion del petroleo de Aragon, Villarello, 3.
Trip to Chihuahua, Lakes, 51.
Upland placers of La Cienaga, Sonora, Hill (R. T.), 7.
Value of ores in Mexico, Emmons (N. H.), 1.
Vanadio de Charcas, Caballero, 2.
Yaqui River country of Sonora, Bancroft, 1.
Michigan.
Alabaster area, Gregory (W. M.), 3.
Asphalt in Delta County, Lane, 6.
Cement materials and industry of the United States, Eckel, 34.
Clays and shales of Michigan, Ries, 1.
Clays of the United States, Ries, 6.

Economic geology—Continued.
Michigan—Continued.
Coal formation of Bay County, Cooper (W. F.), 3.
Coal of Michigan, Lane, 14.
Copper mines of Lake Superior, Rickard (T. A.), 14, 16.
Copper mining in Upper Michigan, Jackson (J. F.), 1.
Deep borings for oil and gas, Lane, 46.
Deep wells and prospects for oil and gas, Lane, 10.
Economic geology of Michigan, Lane, 5, 8, 26.
Eisenerzlagerstätten am Lake Superior, Macco, 1.
Explorations for oil and gas, Lane, 31.
Fifth annual report of State geologist, Lane, 30.
Geology of lands in Upper Peninsula, Rose, 2.
Geology of Menominee Range, Hulst, 1.
Geology of some lands in Michigan, Rose, 1.
Gold near Lake Superior, Lane, 35.
Gypsum, Diehl, 1.
Gypsum and plaster industry of Michigan, Grimsley, 7.
Gypsum deposits in Michigan, Grimsley, 4.
Iron-ore deposits of the Lake Superior region, Van Hise, 2.
Lake Superior geological work, Van Hise, 14.
Lake Superior iron-ore deposits, Grant (U. S.), 6.
Lake Superior iron region, Leith, 10.
Limestones of Michigan, Lane, 1, 9, 41.
Localities and mills manufacturing Portland cement, Lane, 21.
Marl and the manufacture of Portland cement, Hale, 1.
Marls and clays in Michigan, Fall, 1, 2.
Menominee district of Michigan, Bayley, 1.
Michigan clay, shales, and paving materials, Lane, 34.
Northern interior coal field, Lane, 15.
Origin of gypsum, Grimsley, 8.
Origin of Michigan bog limes, Lane, 20.
Origin of Michigan gypsum deposits, Grimsley, 6.
Port Huron oil field, Gordon (C. H.), 2.
Portland-cement industry in Michigan, Russell, 6.
Relation of vein at Central mine, Keweenaw Point, to Kearsarge conglomerate, Hubbard (L. L.), 2.
Report of Michigan Geological Survey, Lane, 17.
Report on Arenac County, Gregory (W. M.), 1, 2.
Salt, Lane, 12.
Sixth annual report of the State geologist, Lane, 49.
Summary of Lake Superior geology, Leith, 14.

Economic geology—Continued.
- *Michigan*—Continued.
  - Surface geology of Alcona County, Leverett, 3.
  - Topography, soils, water resources, etc., of Muskegon County, McLouth, 1.
- *Minnesota.*
  - Baraboo iron ore, Winchell (N. H.), 23.
  - Casselton-Fargo folio, Hall and Willard, 1.
  - Cement materials and industry of the United States, Eckel, 34.
  - Constituents of Minnesota soils, Hall (C. W.), 2.
  - Deep wells as a source of water supply for Minneapolis, Winchell (N. H.), 27.
  - Eisenerzlagerstätten am Lake Superior, Macco, 1.
  - Geologic work on Lake Superior iron district, Leith, 5.
  - Geology and mines of Lake Superior copper district, Stevens (H. J.), 1.
  - Geology of a new iron district in Minnesota, Thomas, 4.
  - Geology of Minnesota, Hall (C. W.), 5, 7.
  - Geology of the iron ores of Minnesota, Winchell (N. H.), 24.
  - Iron-ore deposits of the Lake Superior region, Van Hise, 2.
  - Iron ores of Mesabi and Gogebic ranges, Leith, 8.
  - Iron ores of Minnesota, Winchell (N. H.), 7.
  - Lake Superior iron ore deposits, Grant (U. S.), 6.
  - Lake Superior iron region during 1903, Leith, 12.
  - Mesabi iron-bearing district, Leith, 4.
  - Mesabi iron ore range, Woodbridge, 1.
  - Mesabi iron range, Winchell (H. V.), 3.
  - Mining in the Vermilion iron district of Minnesota, Thomas, 3.
  - New iron-bearing horizon in Keewatin in Minnesota, Winchell (N. H.), 1.
  - Origin and distribution of Minnesota clays, Berkey, 3.
  - Original source of Lake Superior iron ores, Spurr, 5.
  - Pioneer iron mine, Ely, Minn., Carlyle, 1.
  - Vermilion district of Minnesota, Clements, 2.
  - Vermilion iron-bearing district of Minnesota, Clements, 3.
- *Mississippi.*
  - Cement and cement resources of the Tombigbee River district, Eckel and Crider, 1.
  - Cement materials and industry of the United States, Eckel, 34.
  - Cement resources of northeast Mississippi, Crider, 1.
  - Clays of the United States, Ries, 6.
  - Geology of Oktibbeha County, Logan, 2.
  - Loess of Natchez, Miss., Shimek, 4.

Economic geology—Continued.
- *Mississippi*—Continued.
  - Phosphate deposits, Brown (L. P.), 1.
  - Stoneware and brick clays, Eckel, 18.
- *Missouri.*
  - Biennial report of State geologist, Buckley, 7.
  - Bituminous and asphalt rocks, Broadhead, 4.
  - Cement materials and industry of the United States, Eckel, 34.
  - Coal fields of Missouri, Bush, 1.
  - Copper deposits of Missouri, Bain and Ulrich, 1, 2.
  - Disseminated lead ores of southeast Missouri, Nason, 4.
  - Galena-Joplin lead and zinc district, Haworth, 1.
  - Geology of Miller County, Ball and Smith, 1.
  - Geology of Moniteau County, Van Horn, 1.
  - Gisements de minerals de zinc, Demaret, 1.
  - Graydon sandstone, Babcock and Minor, 1.
  - Joplin zinc district, Steele, 1.
  - Lead and zinc deposits of Mississippi Valley, Keyes, 20.
  - Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
  - Lead and zinc deposits of Ozark region, Bain, 2.
  - Lead and zinc deposits of Ozark region, Van Hise, 5.
  - Lead and zinc deposits of the Joplin district, Smith (W. S. T.), 2.
  - Missouri and Arkansas zinc mines, Branner, 3.
  - Missouri and Arkansas zinc mines, Hedburg, 1.
  - Missouri and Arkansas zinc mines, Nichols (H. W.), 2.
  - Missouri coal field, Griffith, 4.
  - Missouri lead and zinc regions, Crook, 2.
  - Origin of Joplin ore deposits, Bain, 1.
  - Quarrying industry of Missouri, Buckley and Buehler, 1.
  - Pierson Creek mines, Smith and Standley, 1.
  - Report of State geologist, Buckley, 4.
  - Source of Missouri lead, Wheeler (H. A.), 1.
  - Structural features of Joplin district, Bain, 17.
  - Western interior coal field, Bain, 3.
  - Zinc deposits of Missouri, Bain, 13.
- *Montana.*
  - Cement resources of Montana, Weed, 33.
  - Chalcocite at Butte, Winchell (H. V.), 2.
  - Conditions in veins and faults in Butte, Braden, 1.
  - Corundum in Montana, Edman, 1.
  - Economic value of hot springs, Weed, 38.

Economic geology—Continued.
- *Montana*—Continued.
  - Geological reconnaissance across the Bitterroot Range and Clearwater Mountains, Lindgren, 21.
  - Geology and ore deposits of Elkhorn mining district, Weed, 5.
  - Geology of the Butte mining district, Miller (G. W.), 2.
  - Gold mines of Marysville district, Weed, 14.
  - Gold nugget from Montana, Pearce, 1.
  - Gold production of North America, Lindgren, 16.
  - Gypsum deposits, Rowe, 5.
  - Gypsum deposits in Montana, Weed, 25.
  - Igneous rocks and their segregation, Winchell (A. N.), 4.
  - Influence of country rock on mineral veins, Weed, 6.
  - Mineral deposits of Bitterroot Range and Clearwater Mountains, Lindgren, 11.
  - Montana coal fields, Rowe, 2, 6.
  - Oil of the northern Rocky Mountains, Willis, 4.
  - Ore deposits at Butte, Weed, 16.
  - Ores of Butte mining district, Byrne, 3.
  - Rocky Mountain coal fields, Storrs (L. S.), 1.
  - Source of placer gold in Alder Gulch, Douglass, 11.
  - Volcanic ash beds of Montana, Rowe, 1.
- *Nebraska.*
  - Cement materials and industry of the United States, Eckel, 34.
  - Comparative value of bluff and valley wash deposits as brick material, Fisher (C. A.), 1.
  - Dakota and Carboniferous clays of Nebraska, Gould and Fisher, 1.
  - Dakota Cretaceous of Kansas and Nebraska, Gould, 5.
  - Geology and underground water resources of the central Great Plains, Darton, 18.
  - Geology of Dakota County, Burchard, 2.
  - Jefferson County, Carmony, 1.
  - Lignites of the Missouri Valley, Burchard, 1.
  - Limestone quarries of Nebraska, Fisher (C. A.), 2.
  - Report of State geologist, Barbour (E. H.), 8.
  - Scotts Bluff folio, Darton, 11.
- *Nevada.*
  - Alum deposit near Silver Peak, Spurr, 21.
  - Building stones of Nevada, Reid (J. A.), 2.
  - Cement materials and industry of the United States, Eckel, 34.
  - Coal deposits between Silver Creek and Candelaria, Spurr, 20.
  - Contact quaquaversal, Purington, 2.
  - Delamar and Horn-Silver mines, Emmons (S. F.), 3.

Economic geology—Continued.
- *Nevada*—Continued.
  - Developments at Tonopah during 1904, Spurr, 26.
  - District of Goldfield, Draper, 1.
  - Genetic relations of western Nevada ores, Spurr, 31.
  - Geological features of Nevada, Louderback, 1.
  - Geology of Goldfield, Dominian, 1, 2.
  - Geology of Goldfields district, Spurr, 19.
  - Geology of Nevada, Spurr, 6.
  - Geology of region of Walker River, Smith (D. T.), 2.
  - Geology of the Tonopah mining district, Spurr, 29.
  - Gold-bearing quartzites of eastern Nevada, Weeks, 2.
  - Gold production of North America, Lindgren, 16.
  - Gold production of North America, Turner, 15.
  - Gypsum deposits in Nevada, Louderback, 5.
  - Gypsum deposits of Nevada, Louderback, 2.
  - Hydrothermal activity in veins at Wedekind, Morris, 1.
  - Lone Mountain district, Lakes, 72.
  - Mines of Esmeralda County, Turner, 3.
  - Montezuma district, Stretch, 3.
  - Nevada coal field, Stoneham, 1.
  - Nevada ore deposit, Wiel, 1.
  - Nitrate deposits, Humboldt County, Wagenen, 1.
  - Notes on Goldfield, Winchell (H. V.), 5.
  - Notes on Tonopah, Easton, 1.
  - Notes on two desert mines, Emmons (S. F.), 2.
  - Occurrence of tungsten ore, Weeks, 1.
  - Ore deposits of Contact, Bailey (J. T.), 1.
  - Ore deposits of Silver Peak quadrangle, Spurr, 18.
  - Ore deposits of Tonopah, Spurr, 8, 9, 11.
  - Ores of Goldfield, Spurr, 25.
  - Osceola tungsten deposits, Smith (F. D.), 1.
  - Rabbit Hole sulphur mines, Adams (G. I.), 16.
  - Santa Fe mining district, McCormick, 1.
  - Silver Peak region, Spurr, 22.
  - Tätigkeit heisser Quellen in den Gängen von Wedekind, Wendeborn, 1.
  - Tonopah, Knapp (S. A.), 1.
  - Tonopah mining camp, Lakes, 68.
  - Tonopah mining district, Spurr, 27.
  - Tungsten ore in eastern Nevada, Weeks, 8.
- *Newfoundland.*
  - Exploration in Carboniferous basin near Grand Lake, Howley, 2.
  - Pyrites deposits at Port au Port, Meissner, 1.

Economic geology—Continued.
  New Hampshire.
    Geology of Littleton, Hitchcock (C. H.), 10.
  New Jersey.
    Artesian wells, Woolman, 1–3.
    Cement materials and industry of the United States, Eckel, 34.
    Cement-rock deposits of the Lehigh district, Eckel, 25.
    Clay and its properties, Ries, 12.
    Clays of the United States, Ries, 6.
    Copper deposits of Appalachian States, Weed, 17.
    Copper deposits of New Jersey, Weed, 18.
    Copper leaching at the American copper mine, Bond, 1.
    Gisements de minerais de zinc, Demaret, 1.
    Griggstown copper deposit, Weed, 27.
    Iron and zinc mines, Kümmel, 5.
    Magnetite deposits in Sussex County, Spencer (A. C.), 12.
    Manufacture of clay products, Ries, 13.
    Mining industry, Kümmel, 2, 3.
    Molding sands of New Jersey, Kümmel, 9.
    Portland-cement industry, Kümmel, 1.
    Stratigraphy of New Jersey clays, Kümmel and Knapp, 1.
    Talc deposits of Phillipsburg, Peck, 6.
    Underground waters of New Jersey, Knapp (G. N.), 1.
    Zinc and manganese deposits of Franklin Furnace, Wolff, 2.
  New Mexico.
    Application of geology to economic problems in New Mexico, Herrick (C. L.), 1.
    Burro Mountain copper district, Reid (G. D.), 1.
    Cerrillos anthracite mine, Lakes, 5.
    Coal fields of the White Mountain region, Fisher (C. A.), 4.
    Coal, graphite, and oil field of Raton, Lakes, 23.
    Copper deposits of Sierra Oscura, Turner, 11.
    Curtis mines, Lakes, 7.
    Geology of Apache Canyon placers, Keyes, 33.
    Geology of the Cerrillos Hills, Johnson (D. W.), 4.
    Geology of the Jemez-Albuquerque region, Reagan, 1.
    Gisements de minerais de zinc, Demaret, 1.
    Gold production of North America, Lindgren, 16.
    Gypsum deposits in New Mexico, Herrick (H. N.), 1.
    Hagan coal field, Keyes, 43.
    Iron deposits of the Chupadera Mesa, Keyes, 42.
    Jemez coal fields, Reagan, 4.
    Lake Otero, Herrick (C. L.), 6.

Economic geology—Continued.
  New Mexico—Continued.
    Mogollon range, Weatherby, 1.
    New coal field, Lakes, 6.
    New Mexico copper deposits, Austin, 2.
    New Mexico mines and minerals, Jones (F. A.), 1.
    Ore deposits of San Pedro district, Yung and McCaffery, 1.
    Ore deposits of the Sierra de Los Caballos, Keyes, 47.
    Remarkable silver pipe, Keyes, 32.
    Report of mine inspector, Sheridan, 1.
    Rocky Mountain coal fields, Storrs (L. S.), 1.
    Secondary enrichment in the Santa Rita district, Bagg, 5.
    Trip to White Oaks, Smith and Dominian, 1.
    White sands of New Mexico, Brady, 1.
    Zinc carbonate ores of the Magdalena Mountains, Keyes, 48.
  New York.
    Abrasives of New York State, Magnus, 1.
    Artesian conditions on Long Island, Veatch, 6.
    Artesian-well sections at Ithaca, Tarr, 5.
    Cement industry in New York, Eckel, 5.
    Cement materials and industry of the United States, Eckel, 34.
    Clays of the United States, Ries, 6.
    Clinton hematite, Eckel, 33.
    Economic geology of Monroe County, Sarle, 3.
    Economic geology of New York, New York State Museum, 1.
    Economic geology of Oneida County, Smyth (C. H.), 5.
    Economic geology of western New York, Bishop (T. P.), 2.
    Economic products of St. Lawrence County, Logan, 1.
    Emery deposits of Westchester County, Eckel, 2.
    Geological history of hematite iron ores of Antwerp and Fowler belt in New York, Crosby, 3.
    Geology of the Paradox Lake quadrangle, Ogilvie, 6.
    Graphite in the Adirondacks, Kemp, 27.
    Gypsum deposits in New York, Eckel, 22.
    Gypsum deposits of New York State, Parsons, 2.
    Gypsum industry in New York, Parsons, 1, 4.
    Hematite deposits of New York, Eckel, 30.
    Hematite iron ores of Antwerp and Fowler belt, Crosby, 2.
    Hydrology of New York, Rafter, 1.
    Lime and cement industries of New York, Ries, 4.
    Limestones in central New York, Schneider, 2.

Economic geology—Continued.
- *New York*—Continued.
  - Limonite deposits of New York and New England, Eckel, 36.
  - Magnetite deposits at Mineville, Ries, 8.
  - Mineral developments around Ithaca, Ries, 10.
  - Mineral developments at Mineville, Ries, 11.
  - Mineral resources of Onondaga County, Hopkins (T. C.), 9.
  - Minerals not commercially important, Whitlock, 3.
  - Mining and quarry industry during 1904, Newland, 2.
  - New York City folio, Merrill and others, 1.
  - Oil and gas in New York, Bishop (T. P.), 1.
  - Peat, Parsons, 3.
  - Peat and its occurrence in New York, Ries, 7.
  - Portland-cement industry in New York, Eckel, 4.
  - Portland-cement resources of New York, Eckel, 39.
  - Pyrite deposits of the western Adirondacks, Eckel, 40.
  - Quarries of bluestone, Dickinson, 1.
  - Quarry industry in southeastern New York, Eckel, 6.
  - Rossie lead veins, Smyth (C. H.), 4.
  - Salt and other resources of the Watkins Glen quadrangle, Kindle, 7.
  - Slate quarries of Washington County, Nevius, 1.
  - Whetstone industry, Schneider, 5.
- *Nicaragua.*
  - Gold fields of eastern Nicaragua, Gottschalk, 1.
- *North Carolina.*
  - Asheville folio, Keith, 9.
  - Atlantic coast Triassic coal field, Woodworth, 4.
  - Biennial report of the State geologist, Holmes (J. A.), 1, 2.
  - Carolina gold deposits, Weed, 3.
  - Carolina tin belt, Graton, 3.
  - Cement materials and industry of the United States, Eckel, 34.
  - Clays of the United States, Ries, 6.
  - Copper-bearing rocks of Virgilina copper district, Watson (T. L.), 6.
  - Copper deposits of Appalachian States, Weed, 17.
  - Copper deposits of southern United States, Weed, 2.
  - Corundum in North Carolina, Ropes, 1.
  - Corundum of North Carolina, Pratt and Lewis, 1.
  - Cranberry folio, Keith, 4.
  - Gold in North Carolina, Moore (F.), 1.
  - Greeneville folio, Keith, 11.
  - Iron-ore deposits of the Cranberry district, Keith, 5.
  - Marble and talc of North Carolina, Pratt, 7.

Economic geology—Continued.
- *North Carolina*—Continued.
  - Mining industry in North Carolina, Pratt, 4, 9–11.
  - Mount Mitchell folio, Keith, 12.
  - Norfolk folio, Darton, 7.
  - Phosphate deposits, Brown (L. P.), 1.
  - Talc deposits of North Carolina, Keith, 7.
  - Tin, Struthers and Pratt, 1.
  - Tin deposits of the Carolinas, Pratt and Sterrett, 1.
- *North Dakota.*
  - Casselton-Fargo folio, Hall and Willard, 1.
  - Cement materials and industry of the United States, Eckel, 34.
  - Economic geology of the Pembina region, Berkey, 7.
  - Lignite coal fields of North Dakota, Wilder, 2.
  - Lignite deposits, Hazeltine, 1.
  - Lignite of North Dakota, Wilder, 1, 8.
  - Lignite on the Missouri, Heart, and Cannon Ball rivers, Wilder, 10.
  - Lignites of the Missouri Valley, Burchard, 1.
  - Region between the Northern Pacific Railroad and Missouri River, Wood (L. H.), 1.
  - Report of Geological Survey, Babcock, 1.
  - Rocky Mountain coal fields, Storrs (L. S.), 1.
  - Water resources of Devils Lake region, Babcock, 2.
- *Ohio.*
  - Berea grit oil sand in Cadiz quadrangle, Griswold, 1.
  - Bituminous coal field of Ohio, Hazeltine, 2.
  - Cement materials and industry of the United States, Eckel, 34.
  - Clays of the United States, Ries, 6.
  - Composition and occurrence of petroleum, Mabery, 3.
  - Corning oil and gas field, Bownocker, 2.
  - Eastern Ohio oil fields, Griswold, 2.
  - Gypsum deposits in Ohio, Peppel, 1.
  - Lime resources of Ohio, Orton and Peppel, 1.
  - Manufacture of hydraulic cements, Bleininger, 1.
  - Natural features and economic development of drainage areas in Ohio, Flynn (B. H. and M. S.), 1.
  - Ohio natural-gas fields, Bownocker, 4.
  - Oil and gas producing rocks of Ohio, Bownocker, 3.
  - Origin of gypsum deposits, Sherwin, 2.
  - Petroleum and natural gas in Ohio, Bownocker, 5.
  - Salt deposits of northeastern Ohio, Bownocker, 6.
- *Oklahoma.*
  - Building stone of Oklahoma, Schramm, 1.

Economic geology—Continued.
Oklahoma—Continued.
Cement materials and industry of the United States, Eckel, 34.
Contact of Permian with Pennsylvanian in Oklahoma, Kirk, 1.
Gypsum deposits in Oklahoma, Gould, 11.
Oklahoma gypsum, Gould, 10.
Oklahoma limestones, Gould, 8.
Oklahoma salt plains, Gould, 7.
Reported gold deposits of the Wichita Mountains, Bain, 8, 9.
Reported ore deposits of Wichita Mountains, Bain, 10.
Springs of Kansas and Oklahoma, Gould, 3.
Oregon.
Artesian basins in Idaho and Oregon, Russell, 9.
Beach gold and its source, Washburne, 3.
Bohemia mining district of western Oregon, Kimball, 1.
Borax mine in southern Oregon, Dennis, 1.
Cement materials and industry of the United States, Eckel, 34.
Coal fields of Pacific coast, Smith (G. O.), 6.
Coal in Washington, near Portland, Diller, 21.
Coos Bay coal fields, Rockwell, 1.
Coos Bay folio, Diller, 4.
Gisements des minerais de mercure, Demaret, 2.
Gold belt of Blue Mountains, Lindgren, 4.
Gold mining in eastern Oregon, Beadle, 1.
Gold production of North America, Lindgren, 16.
Gypsum deposits in Oregon, Lindgren, 20.
Mesozoic of southwestern Oregon, Louderback, 6.
Mineral resources and mining in Oregon, Drake, 1.
Nampa folio, Lindgren and Drake, 1.
Native gold in igneous rocks, Mallery, 1.
Oregon nickel prospects, Ledoux, 1.
Placer gold in Oregon, Washburne, 2.
Port Orford folio, Diller, 11.
Quecksilberablagerungen in Oregon, Wendeborn, 2.
Quicksilver deposits of Oregon, Dennis, 2.
So-called iron ore near Portland, Diller, 20.
Panama.
Manganese industry of Panama, Williams (E. G.), 1.
Pennsylvania.
Anthracite coal fields, Storrs (A. H.), 1.

Economic geology—Continued.
Pennsylvania—Continued.
Anthracite coal near Perkiomen Creek, Carter (O. S. C.), 2.
Anthracite situation, Kemp, 17.
Barite in Pennsylvania, Stose, 2.
Barnesboro-Patton field, Burrows, 1.
Beaver folio, Pennsylvania, Woolsey, 3.
Bituminous coal field of Pennsylvania, White and Campbell, 1.
Brownsville-Connellsville folio, Campbell (M. R.), 8.
Cement belt in Lehigh and Northampton counties, Peck, 5.
Cement materials and industry of the United States, Eckel, 34.
Cement-rock deposits of the Lehigh district, Eckel, 25.
Charbons gras de la Pennsylvanie et de la Virginie occidentale, Heurteau, 1.
Clays of Great Valley and South Mountain areas, Hopkins (T. C.), 4.
Clays of Pennsylvania, Woolsey, 1.
Clays of southeastern Pennsylvania, Hopkins (T. C.), 1.
Clays of the United States, Ries, 6.
Clays of upper Ohio and Beaver River region, Hice, 2.
Coal Measures of bituminous regions, Adams (T. K.), 1.
Coal Measures of central Pennsylvania, Fluck, 1.
Coal mining in the Wilmore basin, Butts, 3.
Connellsville region mineral resources, Eavenson, 1.
Ebensburg folio, Pennsylvania, Butts, 7.
Elders Ridge coal field, Stone (R. W.), 1.
Elders Ridge folio, Stone (R. W.), 7.
Elkland-Tioga folio, Fuller and Alden, 2.
Gaines folio, Fuller and Alden, 1.
Gaines oil field, Fuller (M. L.), 2.
Gisements des minerais de zinc, Demaret, 1.
Hyner gas pool, Fuller (M. L.), 9.
Indiana folio, Richardson (G. B.), 3.
Kittanning folio, Butts, 4.
Latrobe folio, Campbell (M. R.), 18.
Limestones of southwestern Pennsylvania, Clapp, 4.
Mineral resources of Elders Ridge quadrangle, Stone (R. W.), 8.
Masontown-Uniontown folio, Campbell (M. R.)., 6.
Oil and gas fields of Greene County, Stone (R. W.), 2.
Pennsylvania anthracite coal fields, Stoek, 1.
Petroleum industry of Europe and America, Otsuka, 1.
Pittsburg coal in the Burgettstown quadrangle, Griswold, 3.

Economic geology—Continued.
- *Pennsylvania*—Continued.
  - Recent work in the bituminous coal field of Pennsylvania, Campbell (M. R.), 11.
  - Rural valley folio, Butts, 6.
  - Slate industry at Slatington, Dale, 2.
  - Slate investigations during 1904, Dale, 8.
  - Waynesburg folio, Stone (R. W.), 6.
- *Philippine Islands.*
  - Coal deposits of Batan Island, Smith (W. D.), 1.
  - Coal deposits of Polillo Island, Wigmore, 1.
  - Coal deposits on the Batan military reservation, Wigmore, 2.
  - Coal Measures of the Philippine Islands, Burritt, 1.
  - Geological reconnoissance of Bulacan, McCaskey, 1.
  - Geology of the Philippine Islands, Becker, 1.
  - Pigholugan and Pigtao gold regions, Island of Mindanao, Nichols (J. C.), 1.
  - Sixth annual report of the mining bureau, McCaskey, 2.
- *Rhode Island.*
  - Cement materials and industry of the United States, Eckel, 34.
  - Clays of the United States, Ries, 6.
- *South Carolina.*
  - Carolina gold deposits, Weed, 3.
  - Carolina tin belt, Graton, 3.
  - Cement materials and industry of the United States, Eckel, 34.
  - Clays of the United States, Ries, 6.
  - Mineral resources, Sloan, 1.
  - Phosphate deposits, Brown (L. P.), 1.
  - Phosphate industry, Chazal, 1.
  - Tin, Struthers and Pratt, 1.
  - Tin deposits of the Carolinas, Pratt and Sterrett, 1.
- *South Dakota.*
  - Age of Homestake lode, Hewett, 2.
  - Alexandria folio, Todd and Hall, 1.
  - Artesian wells in North and South Dakota, Upham, 1.
  - Bald Mountain district in the Black Hills, Blatchford, 2.
  - Black Hills ore deposits, O'Harra, 1.
  - Building stones of South Dakota, Todd (J. E.), 7.
  - Cement materials and industry of the United States, Eckel, 34.
  - Deposit of fuller's earth, Cook, 1.
  - Deposits of wolframite in the Black Hills, Irving, 1.
  - De Smet folio, Todd and Hall, 3.
  - Economic resources of Black Hills, Irving and Emmons, 1.
  - Edgemont folio, Darton and Smith, 1.
  - Geology and mineralogy of the Black Hills, O'Harra, 3.

Economic geology—Continued.
- *South Dakota*—Continued.
  - Geology and underground water resources of the central Great Plains, Darton, 18.
  - Geology and water resources of James River Valley, Todd and Hall, 2.
  - Geology of artesian basins, McCaslin, 1.
  - Geology of Black Hills, Darton, 1.
  - Geology of the Black Hills, Jaggar, 5.
  - Gold ores of the Black Hills, Chance, 1.
  - Gold production of North America, Lindgren, 16.
  - Golden West mine, Storms, 5.
  - Gypsum deposits in South Dakota, Darton, 15.
  - Huron folio, Todd (J. E.), 15.
  - Mineral building material, fuels, and waters of South Dakota, Todd (J. E.), 5.
  - Mineral wealth of Black Hills, O'Harra, 2.
  - Mitchell folio, Todd (J. E.), 11.
  - Newcastle folio, Darton, 14.
  - Oelrichs folio, Darton, 8.
  - Olivet folio, Todd (J. E.), 9.
  - Ore deposits of northern Black Hills, Irving, 2.
  - Ore deposits of the Black Hills, Irving, 3, 4.
  - Parker folio, Todd (J. E.), 10.
  - Potsdam formation of Bald Mountain district, Blatchford, 1.
  - Problems of the Dakota artesian system, Todd (J. E.), 2.
  - Sundance folio, Darton, 26.
  - Tungsten ores in the Black Hills, Simmons, 1.
  - Wolframite in Black Hills, Forsyth, 1.
  - Wolframite in Black Hills, Raymond (R. W.), 2.
- *Tennessee.*
  - Asheville folio, Keith, 9.
  - Clays of the United States, Ries, 6.
  - Columbia folio, Hayes and Ulrich, 1.
  - Copper deposits of Appalachian States, Weed, 17.
  - Copper deposits of eastern United States, Weed, 37.
  - Copper deposits of southern United States, Weed, 2.
  - Cranberry folio, Keith, 4.
  - Cumberland Gap coal field, Ashley, 3, 4.
  - Cumberland Plateau coal field, Duffield, 1.
  - Deposits of copper ores at Ducktown, Kemp, 10.
  - Ducktown copper-mining district, McCallie, 4.
  - Gisements de minerais de zinc, Demaret, 1.
  - Greeneville folio, Keith, 11.
  - Horizons of phosphate rocks, Safford, 1.
  - Iron-ore deposits of the Cranberry district, Keith, 5.
  - Iron ores of Shady Valley, Garrison, 2.

Economic geology—Continued.

Tennessee—Continued.

- Jellico coal field, Evans (N. N.), 2.
- Maynardville folio, Keith, 1.
- Phosphate deposits, Brown (L. P.), 1.
- Portland-cement resources of Tennessee, Ulrich, 7.
- Southern Appalachian coal field, Hayes (C. W.), 7.
- Stoneware and brick clays, Eckel, 18.
- Tennessee iron ores, Maxwell, 1.
- Tennessee marbles, Keith, 6.
- Tennessee white phosphate, Eckel, 3.
- Tennessee white phosphate, Hayes (C. W.), 3, 15.
- White phosphates of Decatur County, Eckel, 20.
- Zinc mining in east Tennessee, Keith, 8.

Texas.

- Accumulation of petroleum, Hayes (C. W.), 8.
- Austin folio, Hill and Vaughan, 1.
- Bat guano caves in Texas, Phillips (W. B.), 4.
- Beaumont oil field, Hill (R. T.), 5, 9.
- Beaumont oil field, Phillips (W. B.), 2.
- Chemistry of asphalt rocks, Harper (H. W.), 1.
- Cinnabar deposits of Big Bend province, Hill (R. T.), 8.
- Coal fields of Texas, Ries, 14.
- Coal, lignite, and asphalt rocks, Phillips (W. B.), 6, 12.
- Composition and occurrence of petroleum, Mabery, 3.
- Composition of Texas petroleum, Mabery, 1.
- El Paso tin deposits, Weed, 4.
- Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
- Geological horizon of petroleum, Fishback, 1.
- Geology of Beaumont oil field, Dumble, 2.
- Geology of Shafter silver mine district, Udden (Johan A.), 11.
- Gisements des minerais de mercure Demaret, 2.
- Great oil well near Beaumont, Dumble, 8.
- Great oil well near Beaumont, Lucas (A. F.), 1.
- Gypsum deposits in Texas, Hill (B. F.), 3.
- Industrie du pétrole en Californie Heurteau, 2.
- Iron ores of east Texas, Dumble, 3, 6.
- Iron ores of northeastern Texas, Eckel, 37.
- Lead ore in Burnett County, Phillips (W. B.), 9.
- Mount Pleasant phosphate field, Ruhm, 1.
- Native sulphur in El Paso County, Richardson (G. B.), 8.
- New quicksilver field in Brewster County, Phillips (W. B.), 8.
- New quicksilver mining district, Kirk and Malcolmson, 1.
- Oil and gas fields of western interior and Gulf coast, Adams (G. I.), 2.
- Oil fields of the Texas-Louisiana gulf coast, Fenneman, 7, 8.
- Oil fields of Texas-Louisiana Gulf coastal plain, Hayes (C. W.), 13.
- Oil fields of Texas-Louisiana Gulf coastal plain, Hayes and Kennedy, 1.
- Petroleum from the Beaumont field, Richardson and Wallace, 1.
- Petroleum industry of Europe and America, Otsuka, 1.
- Physical geography, geology, and resources of Texas, Dumble, 1.
- Portland-cement resources of Texas, Taff, 15.
- Quicksilver deposits of Brewster County, Phillips (W. B.), 14.
- Quicksilver district in Brewster County, Phillips (W. B.), 10, 11.
- Quicksilver mines of Brewster County, Spalding, 1.
- Reconnaissance in trans-Pecos Texas, Richardson (G. B.), 4.
- Salt, gypsum, and petroleum in trans-Pecos Texas, Richardson (G. B.), 7.
- Southern oil fields, Hagar, 1.
- Southwestern coal field, Taff, 4.
- Sulphur, oil, and quicksilver in trans-Pecos Texas, Phillips (W. B.), 5.
- Terlingua quicksilver deposits, Brewster County, Hill (B. F.), 1.
- Terlingua quicksilver deposits, Turner, 17.
- Terlingua quicksilver district, Kirk, 1.
- Texan oil deposits, Willey, 1.
- Texas petroleum, Phillips (W. B.), 1.
- Texas petroleum, Thiele, 1.
- Tin deposits at El Paso, Weed, 15.
- Trans-Pecos sulphur field, Caracristi, 1.
- Volcanic origin of oil, Coste, 4.

Utah.

- Bingham mining camp, Emmens, 1.
- Cactus copper mine, Emmons (S. F.), 21.
- Cement materials and industry of the United States, Eckel, 34.
- Coal mining at Sunnyside, Harrington (D.), 1.
- Copper deposits of Beaver River Range, Crowther, 1.
- Delamar and Horn-Silver mines, Emmons (S. F.), 3.
- Economic geology of the Bingham district, Boutwell, 12.
- Genesis of ore deposits at Bingham, Utah, Boutwell, 14.
- Geology of Mercur, Dern, 1.
- Geology of Park City district, Bell (R. N.), 4.

Economic geology—Continued.
Utah—Continued.
Gold production of North America, Lindgren, 16.
Gypsum, Diehl, 1.
Gypsum deposits in Utah, Boutwell, 3.
Iron ores in Utah, Leith, 11.
Iron ores in the Uinta Mountains, Boutwell, 5.
Iron ores of the Uinta Mountains, Warwick, 1.
Mineral crest, Emmons (S. F.), 12.
Mineral crest, Jenney, 3.
Mineral crest, Smith (G. O.), 11.
Mineral resources of the Uinta Mountains, Berkey, 4.
Natural gas near Salt Lake City, Richardson (G. B.), 6.
Notes on two desert mines, Emmons (S. F.), 2.
Oil and asphalt prospects in Salt Lake basin, Utah, Boutwell, 11.
Ore deposits of Bingham, Boutwell, 2, 10, 13.
Origin of magnetic iron ores of Iron County, Jennings (E. P.), 2.
Park City mining district, Boutwell, 1, 4, 8.
Rock gypsum at Nephi, Boutwell, 6.
Rocky Mountain gold fields, Storrs (L. S.), 1.
Salt industry in Utah and California, Eckel, 26.
Slate deposits of California and Utah, Eckel, 24.
Stateline mining district, Smith (G. H.), 1.
Southwestern Utah and its iron ores, Hewett, 1.
Vanadium and uranium in southeastern Utah, Boutwell, 9.
Vermont.
Arsenic mines at Brinton, Cowan, 1.
Asbestos region in northern Vermont, Kemp, 3, 6, 14.
Big Stone Gap coal field, Pultz, 1.
Brandon clays, Woodworth, 8.
Cement materials and industry of the United States, Eckel, 34.
Coals of Pocahontas field, Fowler, 1.
Copper deposits of Orange County, Smyth and Smith, 1.
Copper mines of Vermont, Weed, 28.
Gisements de minerals de zinc, Demaret, 1.
Granite area of Barre, Finlay (G. I.), 3.
Gypsum deposits in Virginia, Eckel, 23.
Marble, slate, and granite industries, Perkins, 1.
Mineral industries, Perkins, 6.
Mineral resources of Vermont, Perkins, 2, 10, 16.
Norton coals of Big Sandy basin, Althouse, 1.
Occurrence of asbestos, Kemp, 8.
Petrography of Belvidere Mountain deposits, Marsters, 3.

Economic geology—Continued.
Vermont—Continued.
Quartz veins in Maine and Vermont, Smith (G. O.), 14.
Serpentine belt of Lamoille and Orleans counties, Marsters, 2.
Serpentine of Belvidere Mountain, Marsters, 4.
Slate investigations during 1904, Dale, 8.
Terranes of Orange County, Richardson (C. H.), 2.
Virginia.
Atlantic coast Triassic coal field, Woodworth, 4.
Cement materials of the Valley of Virginia, Bassler, 3.
Cement resources of the Valley of Virginia, Catlett, 3.
Clays of the United States, Ries, 6.
Copper-bearing rocks of Virgilina copper district, Watson (T. L.), 6.
Copper deposits of Appalachian States, Weed, 17.
Copper deposits of eastern United States, Weed, 37.
Copper deposits of southern United States, Weed, 2.
Lead and zinc deposits of Virginia, Watson (T. L.), 17.
Mining in the Richmond coal basin, Woodworth, 3.
Norfolk folio, Darton, 7.
Origin of Oriskany limonites, Johnson (J. E., jr.), 1.
Portland-cement resources of Virginia, Bassler, 2.
Richmond coal basin, Gay, 1.
Rutile mining in Virginia, Merrill (G. P.), 6.
Salt and gypsum deposits of southwestern Virginia, Eckel, 19.
Slate investigations during 1904, Dale, 8.
Virginia anthracite coal, Randolph (L. S.), 1.
Zinc mining and smelting in southwestern Virginia, Higgins, 1.
Washington.
Building and ornamental stones of Washington, Shedd, 2.
Cement materials and industry of the United States, Eckel, 34.
Clay deposits of Washington, Landes, 5.
Clealum iron ores, Courtis, 1.
Clealum iron ores, Smith and Willis, 1.
Coal deposits of Washington, Landes, 3.
Coal deposits of Washington, Landes and Ruddy, 1.
Coal fields of Cook Inlet, Alaska, and Pacific coast, Kirsopp, 1.
Coal fields of Pacific coast, Smith (G. O.), 6.
Coal in Clallam County, Arnold, 5.
Copper ores in the Cascade Mountains, Stretch, 4.
Ellensburg folio, Smith (G. O.), 7.

Economic geology—Continued.

Washington—Continued.

Gold mining in central Washington, Smith (G. O.), 9.

Gold placers of the coast of Washington, Arnold, 4.

Gold production of North America, Lindgren, 16.

Independent mine at Silverton, Stretch, 2.

Iron ores of Washington, Shedd, 1.

Metalliferous resources of Washington, Landes and others, 1.

Molybdenite at Crown Point, Crook, 3.

Mount Baker mining district, Smith (G. O.), 4.

Mount Stuart folio, Smith (G. O.), 13.

Nonmetalliferous resources of Washington, Landes, 2.

Ore deposits of Monte Cristo, Spurr, 3.

Ore deposits of Monte Cristo, Winchell (H. V.), 1.

Ores of the Republic mine, Chatard and Whitehead, 1.

Silverton mining district, Stretch, 1.

Washington serpentine marbles, Lyon, 1.

Water resources of Washington, Byers (H. G.), 1.

Water resources of Washington, Heine, 1.

Water resources of Washington, Ruddy, 1.

West Indies.

Bitumen in Cuba, Vaughan, 8.

Bituminous deposits of Cardenas, Cuba, Peckham (H. E.), 1.

Copper mines near Habana, Weed, 34.

Copper mines of Cobre, Santiago de Cuba, Moffet, 1.

Copper mines of Santa Clara Province, Cuba, Vaughan, 6.

Geological reconnaissance of Cuba, Hayes, Vaughan, and Spencer, 1.

Geologie Haitis, Tippenhauer, 1, 2.

Gold in Santo Domingo, Garrison, 4.

Iron ores of Cuba, Spencer (A. C.), 1.

Manganese deposits of Santiago Province, Cuba, Spencer (A. C.), 3.

Manganese deposits of Santiago, Spencer (A. C.), 8.

Manganese mining in Cuba, Chibas, 1.

Mineral deposits of Santiago, Cuba, Souder, 1.

Mineral deposits of Santiago, Cuba, Wenstrom, 1.

Occurrence of gold and coal in Trinidad, Guppy, 1.

West Virginia.

Anthracite coal field west of Washington, White (D.), 12.

Anthracite of Third Hill Mountain, Griffith, 2.

Anthracite of Third Hill Mountain, O'Brien (C. J.), 1.

Appalachian coal field, White (I. C.), 7.

Economic geology—Continued.

West Virginia—Continued.

Cement materials and industry of the United States, Eckel, 34.

Charbons gras de la Pennsylvanie et de la Virginie occidental, Heurteau, 1.

Charleston folio, Campbell (M. R.), 2.

Clays of the United States, Ries, 6.

Coal in the Nicholas quadrangle, Ashley, 7.

Coals of Pocahontas field, Fowler, 1.

Kanawha and New River coal fields of West Virginia, Robinson (N.), 1.

Map of coal, oil, and gas in West Virginia, White (I. C.), 8.

Meadow Branch coal field, Campbell (M. R.), 17.

Petroleum and natural gas, White (I. C.), 9.

Properties of Summit Coal Company in Marshall County, Von Rosenberg, 1.

Pure limestone in Berkeley County, Stose, 2.

Raleigh folio, Campbell (M. R.), 5.

Slate industry at Martinsburg, Dale, 2.

Slate investigations during 1904, Dale, 8.

Trip to West Virginia, Poole, 9.

Tug River coal field, Payne, 1.

Wisconsin.

Baraboo iron-bearing district of Wisconsin, Weidman, 5.

Baraboo iron ore, Hille, 2.

Baraboo iron ore, Winchell (N. H.), 23.

Baraboo iron range, Rohn, 1.

Cement materials and industry of the United States, Eckel, 34.

Clays and clay industries, Buckley, 1.

Clays of the United States, Ries, 6.

Copper-bearing rocks of Douglas County, Grant (U. S.), 1.

Eisenerzlagerstätten am Lake Superior, Macco, 1.

Gisements de minerais de zinc, Demaret, 1.

Glacial gold in Wisconsin, Thomas, 2.

Highway construction in Wisconsin, Buckley, 3.

Iron-ore deposits of the Lake Superior region, Van Hise, 2.

Iron ores of the Baraboo district, Weidman, 6.

Lake Superior geological work, Van Hise, 14.

Lake Superior iron-ore deposits, Grant (U. S.), 6.

Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.

Lead and zinc deposits of Ozark region, Van Hise, 5.

Lead and zinc deposits of southwestern Wisconsin, Grant (U. S.), 5.

Soils of Wisconsin, Weidman, 3.

Summary of Lake Superior geology, Leith, 14.

Wisconsin zinc fields, Nicholson, 1.

conomic geology—Continued.
- *Wisconsin*—Continued.
  - Zinc and lead deposits, Grant (U. S.), 9.
  - Zinc and lead deposits of north Arkansas, Branner, 2.
  - Zinc and lead mines near Dodgeville, Ellis (E. E.), 1.
  - Zinc and lead ores of southwestern Wisconsin, Grant (U. S.), 10.
- *Wyoming.*
  - Aladdin folio, Darton and O'Harra, 1.
  - Alkali deposits of Wyoming, Read, 3.
  - Alkali lakes and deposits, Knight and Slosson, 1.
  - Bentonite deposits of Wyoming, Fisher (C. A.), 6.
  - Bonanza, Cottonwood, and Douglas oil fields, Knight and Slosson, 4.
  - Cement materials and industry of the United States, Eckel, 34.
  - Coal fields of Uinta County, Knight (W. C.), 7.
  - Coal of the Bighorn basin, Fisher (C. A.), 5.
  - Coal of the Black Hills, Darton, 20.
  - Copper deposits of the Encampment district, Spencer (A. C.), 10.
  - Copper mining in the Encampment district, Read, 4.
  - Deposit of titanic iron ore, Lindgren, 9.
  - Dutton, Rattlesnake, Arago, Oil Mountain, and Powder River oil fields, Knight and Slosson, 2.
  - Geology and mineral resources, Beeler, 3.
  - Geology and underground water resources of the central Great Plains, Darton, 18.
  - Gold production of North America, Lindgren, 16.
  - Grand Encampment copper district, Lakes, 64.
  - Gypsum deposits in Wyoming, Knight (W. C.), 9.
  - Hartville folio, Smith (W. S. T.), 1.
  - Iron mines of Hartville, Chance, 2.
  - Lagerstätten titanhaltigen Eisenerzes im Laramie Range, Kemp, 31.
  - Laramie cement plaster, Slosson and Moudy, 1.
  - Mineral resources of Encampment copper region, Spencer (A. C.), 6.
  - New occurrence of sperrylite, Wells and Penfield, 1.
  - Newcastle folio, Darton, 14.
  - Newcastle oil field, Knight and Slosson, 3.
  - Occurrence of rare metals in Rambler mine, Knight (W. C.), 4.
  - Platinum in copper ores in Wyoming, Emmons (S. F.), 11.
  - Platinum in the Rambler mine, Kemp, 20.
  - Petroleum fields, Knight (W. C.), 2, 5.
  - Report by the State geologist, Beeler, 2.
  - Rocky Mountain coal fields, Storrs (L. S.), 1.

Economic geology—Continued.
- *Wyoming*—Continued.
  - South Pass gold district, Fremont County, Beeler, 1.
  - Sundance folio, Darton, 26.
  - Sweetwater mining district, Knight (W. C.), 3.
  - Titaniferous magnetite in Wyoming, Kemp, 36.
- *General.*
  - American cement industry, Eckel, 38.
  - Anthracite situation, Kemp, 17.
  - Application of geology to mining, Spurr, 4, 14.
  - Arkansas and Indian Territory coals, Keyes, 13.
  - Asphalt and bituminous rock deposits, Eldridge, 1, 3.
  - Aurite, and a general theory of gold ore genesis, Voyle, 1.
  - Bitumen and oil rocks, Broadhead, 5.
  - Bonanzas and pockets of ore, Lakes, 59.
  - Building and road materials, Lane, 30.
  - Cements, limes, and plasters, their materials, manufacture, and properties, Eckel, 32
  - Change of ore bodies with change of country rock, Lakes, 8.
  - Character and genesis of certain contact deposits, Lindgren, 5.
  - Chemical composition of shales and roofing slates, Eckel, 28.
  - Chemistry of ore deposition, Church, 2.
  - Chemistry of ore deposition, Jenney, 4.
  - Chemistry of ore deposition, Sullivan, 1.
  - Circulation of underground aqueous solutions and the deposition of lode ores, Finch (J. W.), 1.
  - Classification of coals, Campbell (M. R.), 21.
  - Classification of crystalline cements, Eckel, 7.
  - Classification of ore deposits, Lindgren, 17.
  - Classification of ore deposits, Weed, 24.
  - Clays of the United States, Ries, 6.
  - Coal fields of United States, Hayes (C. W.), 6.
  - Coal fields of the United States, Hayes (C. W.), 12.
  - Coal outcrops, Catlett, 1.
  - Coal outcrops, Randolph, 1.
  - Coal outcrops, Scholz, 1.
  - Coal resources of Pacific, Emerson (H.), 1.
  - Coal resources of Wyoming, Trumbull, 1.
  - Composition and occurrence of petroleum, Mabery, 3.
  - Contact metamorphic and other ore deposits near igneous contacts, Weed, 11.
  - Contiguity of ore deposits of different generic relationships, Keyes, 15.
  - Contribution to the natural history of marl, Davis (C. A.), 1.

Economic geology—Continued.
  General—Continued.
    Contributions to economic geology, Emmons, Hayes, 1–3.
    Contributions to economic geology, 1902, Hayes (C. W.), 9.
    Contribution to economic geology, 1903, Hayes (C. W.), 16.
    Contributions to economic geology, 1904, Hayes (C. W.), 18.
    Copper ore and garnet in association, Blake (W. P.), 16.
    Copper production of the United States, Weed, 36.
    Criticism of Dr. Jenney's paper on the mineral crest, Smith (G. O.), 5.
    Cross-vein ore-shoots and fractures, Weed, 22.
    Débris fans of the arid region, Hilgard, 3.
    Deposition of copper by solutions of ferrous salts, Biddle, 1.
    Deposition of ores in limestone, Jenney, 4.
    Deposition of ores from an igneous magma, Stevenson (R.), 1–3.
    Diamondiferous deposits in the United States, Hobbs, 4.
    Differentiation of igneous magmas and the formation of ores, Kemp, 22.
    Differentiation of igneous magmas, Stevens (R.), 3.
    Diffusion of petroleum through fuller's earth, Day (D. T.), 2.
    Dilatation fissures and their contained ores, Weed, 31.
    Distribución de la riqueza en los criaderos metalíferos primarios epigenéticos, Villarello, 8.
    Distribution of copper in the United States, Weed, 30.
    Distribution of platinum metals, Dickson, 5.
    Economic geology of the United States, Ries, 15.
    Economic value of hot springs, Weed, 38.
    Enrichment in fissure veins, Hill (R. T.), 17.
    Enrichment in fissure veins, Spurr, 30.
    Enrichment in veins, Church, 3.
    Enrichment of gold and silver veins, Weed, 1.
    Exploration for gold in central States, Hall (C. W.), 1.
    Faults in metal mines, Lakes, 33.
    Field operations of the Bureau of Soils, Whitney, 2, 6.
    Fire clays of Coal Measures, Hopkins (T. C.), 5.
    Formation and geology of salt deposits, Jones (F. O.), 1.
    Formation of bonanzas in upper portions of gold veins, Rickard (T. A.), 3.
    Formation of lead and zinc deposits of Mississippi Valley, Keyes, 16, 20.

Economic geology—Continued.
  General—Continued.
    Formation of veins, Kemp, 28.
    Genesis and character of ore deposits, Storms, 2.
    Genesis of Lake Superior iron ores, Leith, 15.
    Genesis of limonite ores, Garrison, 1.
    Genesis of ore deposits, Alderson, 1.
    Genesis of ore deposits, Boehmer, 1.
    Genesis of ore deposits, Tays, 1.
    Genetic classification of ore deposits, Emmons (S. F.), 4.
    Genetic classification of ore deposits, Kemp, 25.
    Genetic classification of ore deposits, Ransome, 9.
    Genetic classification of ore deposits, Rickard (T. A.), 13.
    Genetic classification of ore deposits, Spurr, 15.
    Genetic classification of ore deposits, Van Hise, 11.
    Geogenesis and its bearings on economic geology, Frazer, 9.
    Geographic distribution of metalliferous ores within the United States, Ransome, 12.
    Geologic deposition of hydrocarbons, Adams (G. I.), 10.
    Geologic deposition of hydrocarbons, Day (D. T.), 3.
    Geological relations and distribution of platinum and associated metals, Kemp, 11.
    Geological survey and the western miner, Rickard (T. A.), 5.
    Geological work in Lake Superior region, Van Hise, 9.
    Geology and water resources of Snake River Plains, Russell, 5.
    Geology applied to mining, Moore (C. J.), 3.
    Geology applied to mining, Spurr, 23.
    Geology of Idaho and Oregon, Russell, 8.
    Geology of ore deposits, Van Hise, 3.
    Geology of western ore deposits, Lakes, 104.
    Geology, technology, and statistics of gypsum, Adams (G. I.), 14.
    Gold and its associations, Merrill, 15.
    Gold deposition by drainage, Bradford, 1.
    Gold mining in southern Appalachians, Pratt, 6.
    Gold production of North America, Lindgren, 6, 14.
    Graphite, Bateman, 1.
    Graphite and garnet, Hopkins (T. C.), 3.
    High plains and their utilization, Johnson (W. D.), 1.
    How copper is produced, Bell (Ralston), 1.

Economic geology—Continued.
General—Continued.
Hypothesis to account for the transformation of vegetable matter into different grades of coal, Campbell (M. R.), 20.
Igneous rocks and circulating waters as factors in ore deposition, Kemp, 12, 19.
Igneous rocks and their segregation, Spurr, 12.
Igneous rocks in ore deposition, Lakes. 100.
Investigation of iron and nonmetalliferous economic minerals, Hayes (C. W.), 19.
Investigation of metalliferous ores, Emmons (S. F.), 10, 17, 19.
Investigation of nonmetalliferous economic minerals, Hayes (C. W.), 10, 17.
Iron and manganese ores of the United States, Eckel, 35.
Lake Superior iron ore deposits, Grant (U. S.), 4.
Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
Lead and zinc resources of the United States, Bain, 16.
Literature of structural materials, Eckel, 11.
Literature on petroleum, Teggart, 1.
Mesabi Iron Range, Leith, 2.
Metallic sulphides from Steamboat Springs, Nev., Lindgren, 19.
Metasomatic processes in fissure veins, Lindgren, 1.
Methods of testing and sampling placer deposits, Kirby, 1.
Mica deposits, Cirkel, 2.
Microscopic structure of building stones, Leffmann, 1.
Mineral crest, Emmons (S. F.), 12.
Mineral crest, Jenney, 1, 2.
Mineral crest, Smith (G. O.), 11.
Mineral resources of United States, Day, 5–8.
Molding sand, Eckel, 14.
Motions of underground waters, Slichter, 1.
Native copper in greenstone from the Pacific coast, Turner, 16.
Native gold in igneous rocks, Weed, 29.
Natural gas in Sussex, Oliphant, 1.
Natural gas in Sussex, White (I. C.), 10.
Natural history of marl, Davis (C. A.), 2.
New geology and vein formation, Carpenter, 1, 2.
Nonmetallic mineral products of the United States, Eckel, 29.
Nonmetallic minerals, Merrill (G. P.), 12.
Nonmetallic minerals; U. S. National Museum, Merrill (G. P.), 3.
North America, Russell, 15.

Economic geology—Continued.
General—Continued.
Occurrence and distribution of corundum, Pratt, 2.
Occurrence and distribution of tin, Hess and Graton, 1.
Observations on gold deposits, Purington, 6.
Oil fields of the West, Willey, 2.
Oil wells of the United States, Kilham, 1.
Ore deposition and deep mining, Lindgren, 27.
Ore deposition and vein enrichment, Weed, 20.
Ore deposition in the cement of rocks, Lakes, 76.
Ore deposits, Beck, 2.
Ore deposits near igneous contacts, Austin, 4.
Ore deposits near igneous contacts, Weed, 20.
Ore formation by concentration through surface decomposition, Keyes, 5.
Ore formation on Prince of Wales Island, Thomae, 1.
Ore in anticlinals, Lakes, 71.
Ore in sight, Kendall, 1.
Ore shoots and outcrop of veins, Lakes, 63.
Ore shoots and veins that do not come to the surface, Lakes, 74.
Ores deposited by underground waters, Maclaren, 1.
Ores from igneous magmas, Kemp, 26.
Origin and classification of ore deposits, Keyes, 2.
Origin and development of iron ores of Mesabi and Gogebic iron ranges, Leith, 8.
Origin and relations of auriferous veins of Algoma (western Ontario), Crosby, 4.
Origins and times of formation of lead and zinc deposits of the Mississippi Valley, Keyes, 16.
Origin, distribution, and uses of coal, Clark (W. B.), 8.
Origin of Australian iron ores, Winchell (N. H.), 5.
Origin of bitumen, Morgan, 1.
Origin of fine gold of Snake River, Bell (R.), 3.
Origin of Michigan boglimes, Lane, 20.
Origin of ore deposits, Adams (F. D.), 4.
Origin of ore deposits, Bain, 5
Origin of ore deposits, Beck, 1.
Origin of ore deposits, Collins (A. L.) 1.
Origin of ore deposits, Emmons (S. F.), 4.
Origin of ore deposits, Keyes, 21.
Origin of ore deposits, Launay, 1.
Origin of ore deposits, Weed, 7.
Origin of petroleum, Grant (C. C.), 8.
Origin of petroleum, Ohly, 1.

Economic geology—Continued.
General—Continued.
Origin of petroleum, coal, etc., Plotts, 1.
Origin of the Coal Measure fire clays, Hopkins (T. C.), 2.
Origin of vein cavities, Nason, 3.
Origine eolienne du loess, Keyes, 17.
Osmosis as a factor in ore formation, Gillette, 1.
Peat and its relation to coal, Lakes, 96.
Petroleum, Baxter, 1.
Petroleum, Oliphant, 2.
Petroleum in western North America, Lakes, 14.
Phase-rule and conceptions of igneous magmas, Day and Shepherd, 1.
Phosphate mining industry of the United States, Memminger, 1.
Precious stones in the United States, Kunz, 2.
Preliminary list of deep borings in United States, Darton, 5, 6.
Present standing of applied geology, Ransome, 15.
Principles controlling the deposition of ores, Van Hise, 1, 8.
Problem of metalliferous veins, Kemp, 35.
Problems in geology of ore deposits, Vogt, 1.
Production of gold in United States in 1904, Lindgren, 25.
Production of silver in the United States in 1904, Lindgren, 26.
Progress of economic geology in 1905, Bain, 18.
Prospecting for coal in western States, Lakes, 31.
Recent contributions to the science of ore deposits, Raymond (R. W.), 1.
Recent progress in study of ore deposits, Rickard (T. A.), 4.
Review of analyses of Portland-cement materials, Hillebrand, 3.
Relation of geology to the mining industry, Lawson (A. C.), 12.
Rock segregation and ore deposition, Spurr, 10.
Rock segregation and ore deposition, Stevens (B.), 2.
Rocky Mountain coal fields, Lakes, 79.
Rôle of igneous rocks in formation of veins, Kemp, 9.
Schists and slates as ore carriers, Lakes, 70.
Science of raw materials, Lane, 29.
Scope of applied geology, Johnson (D. W.), 10.
Secondary enrichment, Burgess, 1.
Secondary enrichment, Purington, 4.
Secondary enrichment in arid regions, Starbird, 1.
Secondary enrichment of mineral veins, Herrick (C. L.), 2.
Secondary enrichment of ore deposits, Emmons (S. F.), 1.
Secondary enrichment of ore deposits, Lakes, 46.
Secondary enrichment of ore deposits, Smith (G.), 1.
Secondary enrichment in ore deposits of copper, Kemp, 33.
Shear zones or zones of impregnation vs. true quartz fissure veins, Lakes, 78.
Southern copper deposits, Weed, 10.
Stones for building and decoration, Merrill (G. P.), 11.
Study of stratigraphy, Parks, 7.
Sulphur deposits of Calcasieu Parish, Kerr, 1.
Summaries of literature of economic geology, Eckel, 12.
Summaries of literature of structural materials, Eckel, 9, 10.
Syncline as a structural type, Rickard (T. A.), 10.
Theories of ore deposition, Emmons (S. F.), 15.
Theory of copper deposition, Lane, 28, 44.
Theory of ore deposits applied to prospecting, Wilson (E. B.), 1.
Tin deposits of the world, Fawns, 1.
Tin in the United States, Garrison, 3.
Training of engineers in economic geology, Branner, 9.
Trenton rock petroleum, Blatchley and Sheak, 1.
Underground water circulation, Cross (C. M.), 1.
United States Geological Survey in its relation to the practical miner, Emmons (S. F.), 7.
Utilization of iron and steel slags, Eckel, 17.
Virginius mine, Emmons (S. F.), 16.
Volcanic craters and ore deposits, Lakes, 77.
Volcanic origin of natural gas and petroleum, Bell (Robert), 6.
Volcanic origin of natural gas and petroleum, Coste, 1, 2.
Volcanic origin of natural gas and petroleum, Mickle, 2.
Volcanic origin of oil, Coste, 3.
Water in veins, Rickard (T. A.), 9.
What constitutes a clay, Merrill (G. P.), 5.
What is a fissure vein? Kemp, 34.
What is a fissure vein? Raymond (R. W.), 4.
What is a fissure vein? Spencer (A. C.), 16.
Zinc deposits, Lakes, 52.
Zone of maximum richness in ore bodies, Keyes, 12.
Economic products described.
Abrasive materials, Hopkins (T. C.), 3.
Abrasives, Day, 6–11.
Abrasives, Magnus, 1.

Economic products described—Continued.
- **Abrasives**, Pratt, 10, 11.
- **Actinolite**, Miller (W. G.), 6.
- **Albertite**, Merrill (G. P.), 3.
- **Alkali**, Read, 3.
- **Allanite, orthite**, Merrill (G. P.), 3.
- **Alum**, Merrill (G. P.), 12.
- **Alum**, Spurr, 21.
- **Alum slate or shale**, Merrill (G. P.), 3.
- **Aluminite**, Merrill (G. P.), 3.
- **Aluminum**, Day, 5, 7–11.
- **Alunite**, Merrill (G. P.), 3.
- **Amber**, Merrill (G. P.), 12.
- **Amblygonite**, Merrill (G. P.), 3.
- **Ammonia**, Day, 9–11.
- **Antimony**, Aguilera, 3.
- **Antimony**, Asquith, 1.
- **Antimony**, Day, 5, 7–11.
- **Apatite**, Ells (R. W.), 7, 8, 19, 20.
- **Apatite**; rock phosphates; guano, etc., Merrill (G. P.), 3.
- **Arsenic**, Cowan, 1.
- **Arsenic**, Day, 8–11.
- **Arsenic**, Merrill (G. P.), 12.
- **Arsenic**, Miller (W. G.), 6.
- **Arsenic**, Wells (J. W.), 1.
- **Arsenopyrite**; mispickel or arsenical pyrites, Merrill (G. P.), 3.
- **Artesian** borings, Kerr, 1.
- **Artesian water**, Barbour (E. H.), 8.
- **Artesian water**, Blatchley, 3.
- **Artesian water**, Branner, 6.
- **Artesian water**, Calvin, 9.
- **Artesian water**, Carmony, 1.
- **Artesian water**, Darton, 11, 14.
- **Artesian water**, Knapp (G. N.), 1.
- **Artesian water**, Lerch, 1, 2.
- **Artesian water**, Logan, 2.
- **Artesian water**, Reagan, 3.
- **Artesian water**, Ruddy, 1.
- **Artesian water**, Russell, 8, 9.
- **Artesian water**, Slichter, 1.
- **Artesian water**, Skinner, 1.
- **Artesian water**, Tarr, 5.
- **Artesian water**, Todd (J. E.), 2, 9–11.
- **Artesian water**, Todd and Hall, 1, 2
- **Artesian water**, Tyrrell, 2.
- **Artesian water**, Udden (Johan A.), 1.
- **Artesian water**, Woolman, 3.
- **Artesian waters**, Hill (R. T.), 3.
- **Artesian wells**, Ami, 22.
- **Artesian wells**, Darton, 5, 6.
- **Artesian wells**, Leonard, 2.
- **Artesian wells**, Miller (B. L.), 1.
- **Artesian wells**, Nickles, 1, 2.
- **Artesian wells**, Woolman, 2.
- **Asbestos**, Aguilera, 3.
- **Asbestos**, Cirkel, 1, 3.
- **Asbestos**, Day, 6–11.
- **Asbestos**, Ells (R. W.), 8, 10.
- **Asbestos**, Keith, 9.
- **Asbestos**, Kemp, 3, 6, 8.
- **Asbestos**, Marsters, 3.
- **Asbestos**, Merrill (G. P.), 3, 12.
- **Asbestos**, Perkins, 6.
- **Asbestos**, Pratt, 8.
- **Asbolite**, **Merrill** (G. P.), 3.

Economic products described—Continued.
- **Asphalt**, Adams (G. I.), 10.
- **Asphalt**, Boutwell, 11.
- **Asphalt**, Crane, 4.
- **Asphalt**, Eldridge, 1, 3.
- **Asphalt**, Fuller (M. L.), 5.
- **Asphalt**, Harper (H. W.), 1.
- **Asphalt**, Hayes (C. W.), 4, 14.
- **Asphalt**, Hayes, Vaughan, and Spencer, 1.
- **Asphalt**, Lakes, 60.
- **Asphalt**, Lane, 6.
- **Asphalt**, Merrill (G. P.), 12.
- **Asphalt**, Phillips (W. B.), 6, 12.
- **Asphalt**, Taff, 12.
- **Asphalt rock**, Burk, 2.
- **Asphaltic deposits**, Taff, 6.
- **Asphaltum**, Day, 6–11.
- **Asphaltum**, mineral pitch, Merrill (G. P.), 3.
- **Barite**, Aguilera, 3.
- **Barite**, Ball and Smith, 1.
- **Barite**, Ells (R. W.), 7, 8.
- **Barite**, Keith, 9.
- **Barite**, Miller (A. M.), 4.
- **Barite**, Stose, 2.
- **Barite**; heavy spar, Merrill (G. P.), 3.
- **Barytes**, Day, 6–11.
- **Barytes**, Pratt, 8, 10, 11.
- **Basalt**, Shedd, 2.
- **Bauxite**, Berger, 1.
- **Bauxite**, Day, 5, 7–11.
- **Bauxite**, Hayes (C. W.), 2, 5.
- **Bauxite**, Merrill (G. P.), 3, 12.
- **Bauxite**, Smith and McCalley, 1.
- **Bauxite**, Watson (T. L.), 2, 12.
- **Bentonite**, Darton, 14, 18.
- **Bentonite**, Fisher (C. A.), 6.
- **Beryl**, Aguilera, 3.
- **Beryl**, Pratt, 8.
- **Bismuth**, Aguilera, 3.
- **Bismuth**, Day, 8–9, 11.
- **Bitumen**, Peckham (H. E.), 1.
- **Bitumen**, Vaughan, 8.
- **Bituminous rock**, Eldridge, 3.
- **Bluestone**, Dickinson, 1.
- **Boglime**, Lane, 20.
- **Boracite** or **stassfurtite**; borate of magnesia, Merrill (G. P.), 3.
- **Borax**, Bailey (G. E.), 1.
- **Borax**, Campbell (M. R.), 4, 12.
- **Borax**, Day, 8–11.
- **Borax**, Dennis, 1.
- **Borax**, Merrill (G. P.), 12.
- **Borax** or **tincal**; borate of soda, Merrill (G. P.), 3.
- **Braunite**, Merrill (G. P.), 3.
- **Bromine**, Day, 8–9, 11.
- **Buhrstone**, Merrill (G. P.), 3, 12.
- **Building** and ornamental stones, Keith, 4.
- **Building** and ornamental stones, Landes, 2.
- **Building stone**, Alden, 1, 2.
- **Building stone**, Ashley, 2.
- **Building stone**, Barbour (E. H.), 8.
- **Building stone**, Bishop (T. P.), 2.

Economic products described—Continued.
Building stone, Buckley and Buehler, 1.
Building stone, Campbell (M. R.), 8.
Building stone, Crosby and Loughlin, 1.
Building stone, Darton and Keith, 1.
Building stone, Ells (R. W.), 8.
Building stone, Fairbanks, 7.
Building stone, Fuller and Alden, 1.
Building stone, Fuller and Clapp, 2.
Building stone, Gilpin, 2.
Building stone, Gould, 5, 8.
Building stone, Hopkins (T. C.), 9.
Building stone, Keith, 9, 12.
Building stone, Knight (N.), 2.
Building stone, Lakes, 12, 13.
Building stone, Lazo and Ordóñez, 1.
Building stone, Leffmann, 1.
Building stone, Leonard, 3.
Building stone, Merrill (G. P.), 11.
Building stone, Miller (B. L.), 1.
Building stone, Norton, 1.
Building stone, Perkins, 2.
Building stone, Prosser and Beede, 1.
Building stone, Pratt, 8, 10, 11.
Building stone, Reid (J. A.), 2.
Building stone, Russell, 2.
Building stone, Sarle, 3.
Building stone, Schramm, 1.
Building stone, Shedd, 2.
Building stone, Smith (A. J.), 1.
Building stone, Smith (G. O.), 7.
Building stone, Smith and McCalley, 1.
Building stone, Taff, 3, 6.
Building stone, Todd (J. E.), 5, 9–11.
Building stone, Todd and Hall, 1.
Building stone, Udden, 2.
Building stone, Wilder, 3.
Calk spar, Merrill (G. P.), 12.
Calcite; calk spar; Iceland spar, Merrill (G. P.), 3.
Carbonite or natural coke, Merrill (G. P.), 3.
Celestite, Merrill (G. P.), 3.
Cement, Berkey, 7.
Cement, Blatchley, 1.
Cement, Bleininger, 1.
Cement, Crider, 1.
Cement, Darton, 18.
Cement, Day, 6–11.
Cement, Duryee, 1.
Cement, Eckel, 5, 13, 31–32, 34, 38, 39.
Cement, Eckel and Bain, 1.
Cement, Fall, 1.
Cement, Gillespie, 1.
Cement, Kümmel, 1.
Cement, Lane, 30.
Cement, Miller (W. G.), 6.
Cement, Newland, 2.
Cement, Peck, 5.
Cement, Ries, 4.
Cement, Russell, 2.
Cement, Siebenthal, 2.
Cement, Smith (E. A.), 2, 4.
Cement, Smith and McCalley, 1.
Cement, Todd (J. E.), 5.

Economic products described—Continued.
Cement, Wells (J. W.), 3.
Cement plaster, Slosson and Moody, 1.
Cerite, Merrill (G. P.), 3.
Chalk, Merrill (G. P.), 3, 12.
Chalk, Taff, 5.
Chalkstone, Todd (J. E.), 9.
Chemawinite, Merrill (G. P.), 3.
Chrome, Mathews, 1.
Chromite, Day, 7–9.
Chromite, Diller, 16.
Chromite, Keith, 9.
Chromite, Lindgren, 4.
Chromite, Merrill (G. P.), 3, 12.
Chromite, Pratt, 8, 11.
Chromite, Pratt and Lewis, 1.
Chromium, Aguilera, 3.
Chromium, Spurr, 12.
Clay, Ashley, 2.
Clay, Babcock, 1.
Clay, Barbour (E. H.), 8.
Clay, Berkey, 3.
Clay, Beyer and Williams, 1, 2.
Clay, Beyer and Young, 1.
Clay, Bishop (I. P.), 2.
Clay, Blatchley, 8.
Clay, Bleininger, 1.
Clay, Buckley, 1.
Clay, Campbell (M. R.), 8.
Clay, Darton and Keith, 1.
Clay, Day, 6–11.
Clay, Eckel, 18.
Clay, Fall, 2.
Clay, Fisher (C. A.), 6.
Clay, Fuller and Clapp, 2.
Clay, Gould, 5.
Clay, Gould and Fisher, 1.
Clay, Gregory (W. M.), 1.
Clay, Hice, 2.
Clay, Hopkins (T. C.), 1, 2, 9.
Clay, Keith, 9.
Clay, Kümmel and Knapp, 1.
Clay, Landes, 2, 5.
Clay, Lane, 21, 34, 39.
Clay, Leonard, 3.
Clay, Leverett, 3.
Clay, Lindgren, 4.
Clay, Loughlin, 1.
Clay, Martin (G. C.), 2.
Clay, Mason, 1.
Clay, Mathews, 1.
Clay, Merrill (G. P.), 3, 5, 12.
Clay, Miller (B. L.), 1.
Clay, Newland, 2.
Clay, Pratt, 8, 10, 11.
Clay, Ries, 1, 5, 6, 12, 13.
Clay, Sarle, 3.
Clay, Schrader and Haworth, 2.
Clay, Smith and McCalley, 1.
Clay, Taff, 5.
Clay, Todd (J. E.), 5, 11.
Clay, Udden, 2, 3.
Clay, Wells (J. W.), 4.
Clay, Wilder, 3.
Clay, Woolsey, 1, 3.
Coal, Adams (T. K.), 1.
Coal, Aguilera, 3.

Economic products described—Continued.
Coal, Althouse, 1.
Coal, Armstrong, 1.
Coal, Arnold, 5.
Coal, Ashley, 1, 3, 4, 7.
Coal, Babcock, 1.
Coal, Bache, 1.
Coal, Bailey (L. W.), 8.
Coal, Bain, 3.
Coal, Ball and Smith, 1.
Coal, Barbour (E. H.), 8.
Coal, Becker, 1.
Coal, Beyer and Young, 1.
Coal, Blakemore, 1, 3.
Coal, Brewer (W. M.), 2, 4, 6–8, 11.
Coal, Brooks, 3, 14.
Coal, Burritt, 1.
Coal, Burrows, 1.
Coal, Bush, 1.
Coal, Butts, 3–7.
Coal, Calvin, 1.
Coal, Campbell (M. R.), 2, 5, 6, 8, 11, 16–18, 20, 21.
Coal, Carter (O. S. C.), 2.
Coal, Catlett, 1.
Coal, Clark (W. B.), 8.
Coal, Clark, Martin, and Rutledge, 1.
Coal, Collier, 2, 3, 4, 6.
Coal, Cooper, 3.
Coal, Corless, 1.
Coal, Crane, 1, 2, 4–7.
Coal, Darton, 1, 14, 18, 20, 26.
Coal, Darton and O'Harra, 1.
Coal, Day, 5, 7–11.
Coal, Denis, 1.
Coal, Diller, 4, 11, 21.
Coal, Dowling, 7, 9, 10, 11.
Coal, Duffield, 1.
Coal, Eavenson, 1.
Coal, Eils (R. W.), 3, 23.
Coal, Emerson (B.), 1.
Coal, Evans (A. W.), 1.
Coal, Fisher (C. A.), 4, 5.
Coal, Fletcher, 4, 6.
Coal, Fluck, 1.
Coal, Fowler, 1.
Coal, Fuller and Alden, 1.
Coal, Fuller and Ashley, 1, 2.
Coal, Fuller and Clapp, 2.
Coal, Gay, 1.
Coal, Gilpin, 1, 3.
Coal, Gould, 5.
Coal, Gregory (W. M.), 1, 2.
Coal, Griffith, 2–4.
Coal, Griswold, 3.
Coal, Guppy, 1.
Coal, Gwillim, 4, 5.
Coal, Harrington (D.), 1.
Coal, Haseltine, 1, 2.
Coal, Hayes (C. W.), 6, 7, 12.
Coal, Hayes, Vaughan, and Spencer, 1.
Coal, Henretta, 1.
Coal, Heurteau, 1.
Coal, Hills, 1.
Coal, Hosea, 1.
Coal, Howley, 2.
Coal, Ingall, 1.

Economic products described—Continued.
Coal, Jacobs, 2.
Coal, Johnson (D. W.), 4.
Coal, Kemp, 17.
Coal, Keyes, 13, 22, 43.
Coal, Knight (W. C.), 7.
Coal, Laguerenne, 1.
Coal, Lakes, 3, 5, 6, 23, 25, 39, 60, 62, 65, 66, 79–89, 99.
Coal, Landes, 3.
Coal, Landes and Ruddy, 1.
Coal, Lane, 14, 15, 39, 49.
Coal, Leach (W. W.), 1.
Coal, Leonard, 3.
Coal, Lindgren, 4.
Coal, Ludlow, 1.
Coal, McCalley, 1.
Coal, McCallie, 9.
Coal, McEvoy, 2.
Coal, McLaughlin, 1.
Coal, Martin (G. C.), 2, 3, 11, 15, 16.
Coal, Merrill (G. P.), 12.
Coal, Miller (B. L.), 1.
Coal, Parsons and Liddell, 1.
Coal, Payne, 1.
Coal, Phillips (W. B.), 6, 12, 13.
Coal, Plotts, 1.
Coal, Plumb, 1.
Coal, Poole, 2, 3, 8–10.
Coal, Pratt, 8, 10, 11.
Coal, Pultz, 1.
Coal, Purington, 1.
Coal, Randolph, 1.
Coal, Reagan, 4.
Coal, Richardson (G. B.), 3.
Coal, Rickert, 1.
Coal, Ries, 9, 14.
Coal, Robinson (N.), 1.
Coal, Rockwell, 1.
Coal, Rowe, 2, 6.
Coal, Scholz, 2.
Coal, Schrader, 3.
Coal, Sheridan, 1.
Coal, Smith (F. B.), 1.
Coal, Smith (G. O.), 6, 13.
Coal, Smith (W. D.), 1.
Coal, Smith and McCalley, 1.
Coal, Smith and White, 1.
Coal, Spurr, 20.
Coal, Stoess, 1.
Coal, Stoek, 1.
Coal, Stone (R. W.), 1, 5, 6–9.
Coal, Stoneham, 1.
Coal, Storrs (A. H.), 1.
Coal, Storrs (L. S.), 1.
Coal, Sutton, 1.
Coal, Taff, 3, 4, 7–11, 16
Coal, Todd (J. E.), 5.
Coal, Trumbull, 1.
Coal, Turnbull, 1.
Coal, Vicaire, 1.
Coal, Von Rosenberg, 1.
Coal, White (D.), 7, 12.
Coal, White (I. C.), 7.
Coal, Wigmore, 1, 2.
Coal, Wilder, 3.
Coal, Williams (I. A.), 1.

Economic products described—Continued.
Coal, Woodworth, 4.
Coal, Woolsey, 3.
Coal series, Merrill (G. P.), 3.
Cobalt, Caballero, 1.
Cobalt, Day, 5, 7–9.
Cobalt, Dickson, 4.
Cobalt, Merrill (G. P.), 12.
Cobalt, Miller (W. G.), 8, 11, 13.
Cobalt, Parks, 8.
Cobalt, Spurr, 12.
Cobaltite, Merrill (G. P.), 3.
Coke, Day, 5, 7–11.
Colemanite, Merrill (G. P.), 3.
Columbite, Day, 11.
Columbite and tantalite, Merrill (G. P.), 3.
Copper, Abercrombie, 1.
Copper, Aguilera, 3.
Copper, Austin, 3.
Copper, Bagg, 5.
Copper, Bailey (F.), 1.
Copper, Bain and Ulrich, 1, 2.
Copper, Barlow, 6, 8.
Copper, Barney, 1.
Copper, Becker, 1.
Copper, Bell (Ralston), 1.
Copper, Bell (R. N.), 3.
Copper, Biddle, 1.
Copper, Blake (W. P.), 16.
Copper, Bond, 1.
Copper, Boutwell, 2, 10, 12–14.
Copper, Brewer (W. M.), 4, 11, 13–16.
Copper, Brock, 8.
Copper, Brook, 3.
Copper, Brooks, 4.
Copper, Byrne, 3.
Copper, Carter (W. E. H.), 1.
Copper, Catherinet, 1.
Copper, Crosby, 16.
Copper, Crowther, 1.
Copper, Darton, 18, 26.
Copper, Day, 5, 7–11.
Copper, Diller, 5, 6, 13, 16.
Copper, Dresser, 7, 10, 12, 13, 15.
Copper, Ells (R. W.), 17, 20, 22.
Copper, Emmens, 1.
Copper, Emmons (S. F.), 3, 16, 20, 21.
Copper, Franke, 1.
Copper, Goodwin, 1.
Copper, Grant (U. S.), 1.
Copper, Hayes, Vaughan, and Spencer, 1.
Copper, Hill (R. T.), 4, 11, 12.
Copper, Hitchcock (C. H.), 10.
Copper, Irving and Emmons, 1.
Copper, Jackson (J. F.), 1.
Copper, Jacobs, 1.
Copper, Jaggar and Palache, 1.
Copper, Jennings (E. P.), 1.
Copper, Johnston (R. A. A.), 2.
Copper, Kemp, 32, 33.
Copper, Kirby, 2.
Copper, Krusch, 1.
Copper, Kümmel, 2, 3.
Copper, Lakes, 64.
Copper, Lane, 8, 28, 44.

Economic products described—Continued.
Copper, Ledoux, 2.
Copper, Lee (H. A.), 1.
Copper, Leith, 14.
Copper, Lindgren, 4, 12, 15, 21, 22, 28.
Copper, Lowry, 1.
Copper, Lunt, 1.
Copper, McCarn, 1.
Copper, McCallie, 4.
Copper, MacDonald, 1.
Copper, McCormick, 1.
Copper, Malcolmson, 1.
Copper, Mathez, 1.
Copper, Mendenhall, 7, 8.
Copper, Mendenhall and Schrader, 1, 2.
Copper, Miller (G. W.), 1, 2, 6.
Copper, Musgrave, 1.
Copper, O'Harra, 2.
Copper, Perkins, 2, 6.
Copper, Pratt, 8, 10, 11.
Copper, Probert, 1.
Copper, Ransome, 3, 6–8, 10, 11, 13, 14, 17.
Copper, Read, 4.
Copper, Reid (G. D.), 1.
Copper, Rickard (F.), 2.
Copper, Rickard (T. A.), 14, 15.
Copper, Schrader and Spencer, 1.
Copper, Scott (O. N.), 1.
Copper, Smith (D. T.), 2.
Copper, Smith (W. S. T.), 1.
Copper, Smyth and Smith, 1.
Copper, Souder, 1.
Copper, Spencer (A. C.), 6, 7, 10.
Copper, Spurr, 12.
Copper, Steel, 1.
Copper, Stevens (B.), 1.
Copper, Stevens (H. J.), 1.
Copper, Stretch, 1, 4.
Copper, Tippenhauer, 2.
Copper, Turner, 6, 11.
Copper, Vaughan, 6.
Copper, Vicaire, 1.
Copper, Villafaña, 1.
Copper, Watson (T. L.), 6, 11.
Copper, Weed, 2, 10, 12, 16–19, 23, 26–28, 30, 34, 36, 37.
Copper, Wenstrom, 1.
Copper, Winchell (H. V.), 2, 4.
Copper, Yung and McCaffery, 1.
Corundum, Baker, 1.
Corundum, Barlow, 10.
Corundum, Carter (W. E. H.), 1.
Corundum, Edman, 1.
Corundum, Ells (R. W.), 20.
Corundum, Fuller (H. T.), 1.
Corundum, Keith, 9, 12.
Corundum, Kerr (D. G.), 1.
Corundum, Merrill (G. P.), 12.
Corundum, Miller (W. G.), 6.
Corundum, Pratt, 8, 10.
Corundum, Pratt and Lewis, 1.
Corundum, Ropes, 1.
Corundum and emery, Merrill (G. P.), 3.
Cryolite, Merrill (G. P.), 3.
Cryolite, Day, 8–11.

Economic products described—Continued.
Descloizite, Merrill (G. P.), 3.
Diamond, Hobbs, 4, 8.
Diamond, Kunz, 2.
Diamond, Pratt, 8.
Diaspore, Merrill (G. P.), 3.
Diatom-earth, Blake (W. P.), 10.
Diatomaceous earth, Merrill (G. P.), 12.
Diatomaceous or infusorial earth, Merrill (G. P.), 3.
Dolomite, Merrill (G. P.), 3.
Elaterite, mineral caoutchouc, Merrill (G. P.), 3.
Emerald, Kunz, 2.
Emery, Eckel, 2.
Emery, Fuller (H. T.), 1.
Emery, Magnus, 1.
Emery, Merrill (G. P.), 12.
Emery, Newland, 2.
Epsomite, Epsom salts, Merrill (G. P.), 3.
Erythrite or cobalt bloom, Merrill (G. P.), 3.
Feldspar, Day, 6–11.
Feldspar, Ells (R. W.), 7, 8.
Feldspar, Hopkins (T. C.), 1.
Feldspar, Mathews, 1.
Feldspar, Merrill (G. P.), 3, 12.
Feldspar, Miller (W. G.), 6.
Feldspar, Newland, 2.
Feldspar, Pratt, 8.
Fireclay, Campbell (M. R.), 6.
Fireclay, Darton, 18.
Fireclay, Hopkins (T. C.), 2, 5.
Fireclay, Martin (G. C.), 2.
Fireclay, Mathews, 1.
Flagstone, Fuller and Alden, 2.
Flint, Barbour (E. H.), 8.
Flint, Day, 7–11.
Flint, Hopkins (T. C.), 1.
Flint, Mathews, 1.
Flint, Merrill (G. P.), 3.
Fluorite, Aguilera, 3.
Fluorite, Merrill (G. P.), 3.
Fluorite, Miller (A. M.), 4.
Fluorspar, Bain, 6, 12, 19.
Fluorspar, Burk, 1.
Fluorspar, Day, 6–11.
Fluorspar, Harwood, 1.
Fluorspar, Smith (W. S. T.), 3.
Fluorspar, Ulrich and Smith, 1.
Franklinite, Merrill (G. P.), 3.
Fuller's earth, Cook, 1.
Fuller's earth, Darton, 1, 18.
Fuller's earth, Day, 6–8, 11.
Fuller's earth, Merrill (G. P.), 12.
Fuller's earth, Vaughan, 12, 18.
Gadolinite, Day, 11.
Gadolinite, Merrill (G. P.), 3.
Garnet, Aguilera, 3.
Garnet, Keith, 9.
Garnet, Magnus, 1.
Garnet, Merrill (G. P.), 3.
Garnet, Newland, 2.
Garnet, Pratt, 8.
Garnet gems, Pratt, 8.
Gem minerals, Pratt, 8.

Economic products described—Continued.
Gibbsite, hydrargillite, Merrill (G. P.), 3.
Gilsonite, Merrill (G. P.), 12.
Glass sand, Campbell (M. R.), 8.
Glass sand, Day, 9–11.
Glauberite, Merrill (G. P.), 3.
Glaucodot, Merrill (G. P.), 3.
Gneiss, Watson (T. L.), 8.
Gold, Abercrombie, 1.
Gold, Aguilera, 3.
Gold, Arnold, 4.
Gold, Atkin, 1, 2.
Gold, Austin, 5.
Gold, Bancroft, 1.
Gold, Beadle, 1.
Gold, Becker, 1.
Gold, Bel, 1, 2.
Gold, Bell (R.), 2, 3.
Gold, Bell (R. N.), 3.
Gold, Blake (W. P.), 5, 8.
Gold, Blatchford, 2.
Gold, Bordeaux, 1.
Gold, Boutwell, 2, 8, 12, 13.
Gold, Brent, 1.
Gold, Brewer (W. M.), 14, 16.
Gold, Brock, 4, 5, 7.
Gold, Brooks, 4, 7, 9, 12.
Gold, Brooks and others, 1.
Gold, Burgess, 2.
Gold, Carter (W. E. H.), 1.
Gold, Chalmers, 2.
Gold, Chance, 1.
Gold, Church, 1.
Gold, Clarke (C. H.), 1.
Gold, Clere, 1.
Gold, Coleman, 3.
Gold, Collier, 1, 3, 10.
Gold, Comstock (T. B.), 1.
Gold, Crosby, 4.
Gold, Cummings, 1.
Gold, Darton, 18, 26.
Gold, Day, 5, 7–11.
Gold, Dern, 1.
Gold, Diller, 4, 5, 11, 16, 19.
Gold, Dominian, 1, 2.
Gold, Douglass, 11.
Gold, Draper, 1.
Gold, Dresser, 14.
Gold, Easton, 1.
Gold, Eckel, 15, 16.
Gold, Ells (R. W.), 20.
Gold, Emmons (S. F.), 3.
Gold, Emmons (W. H.), 1.
Gold, Faribault, 1–4.
Gold, Fluker, 1, 2.
Gold, Forsyth, 1.
Gold, Furman, 1.
Gold, Garrison, 4.
Gold, Gilpin, 1.
Gold, Gottschalk, 1.
Gold, Gunther, 1.
Gold, Guppy, 1.
Gold, Gwillim, 1, 2.
Gold, Hall (C. W.), 1.
Gold, Hayes, Vaughan, and Spencer, 1.
Gold, Hershey, 7.

Economic products described—Continued.
Gold, Hewett, 2.
Gold, Hfjar, 1.
Gold, Hill (R. T.), 7, 14, 15.
Gold, Hille, 4.
Gold, Howley, 1.
Gold, Irving, 2–4, 6, 7.
Gold, Irving and Emmons, 1.
Gold, Jaggar and Palache, 1.
Gold, Keele, 1.
Gold, Keith, 4.
Gold, Keyes, 33.
Gold, Kinzie, 1, 2.
Gold, Kirby, 2.
Gold, Knapp (S. A.), 1.
Gold, Knight (W. C.), 3.
Gold, Knox, 1.
Gold, Kolderup, 1.
Gold, Laird, 1.
Gold, Lakes, 1, 43, 44, 51, 68.
Gold, Lane, 35.
Gold, Lee (H. A.), 1.
Gold, L'Hame, 1, 2.
Gold, Lindgren, 4, 6, 7, 8, 12, 14, 16, 21, 25, 28.
Gold, Lindgren and Drake, 1, 2.
Gold, Lindgren and Ransome, 1, 2.
Gold, Lovewell, 1, 2.
Gold, Lowry, 1.
Gold, McConnell, 2, 4–6.
Gold, MacDonald, 1.
Gold, Mallery, 1.
Gold, Martin, 12, 13.
Gold, Mendenhall, 1, 3, 8.
Gold, Mendenhall and Schrader, 1.
Gold, Miers, 1.
Gold, Miller (W. G.), 4, 6, 10.
Gold, Moffit, 2–4.
Gold, Moore (F.), 1.
Gold, Nichols (J. C.), 1.
Gold, O'Harra, 1–3.
Gold, Palache, 2.
Gold, Parsons and Liddell, 1.
Gold, Penrose, 1.
Gold, Pratt, 5, 6, 8, 10, 11.
Gold, Prichard (W. R.), 1.
Gold, Prindle, 1, 2.
Gold, Prindle and Hess, 1.
Gold, Purington, 1, 3, 5–7, 8, 9.
Gold, Queneau, 1.
Gold, Ransome, 1, 6, 13, 16, 17.
Gold, Rickard (F.), 1.
Gold, Rickard (T. A.), 2, 6, 11, 12.
Gold, Ritter, 1.
Gold, Schrader, 3.
Gold, Schrader and Brooks, 1.
Gold, Schrader and Spencer, 1.
Gold, Smith (A. H.), 1.
Gold, Smith (D. T.), 2.
Gold, Smith (G. D.), 4, 9, 13.
Gold, Smith and McCalley, 1.
Gold, Spencer (A. C.), 9, 11, 13, 14.
Gold, Spurr, 9, 11–13, 18, 19, 22, 25–27, 29, 31.
Gold, Spurr and Garrey, 1.
Gold, Storms, 1, 3, 5.
Gold, Stretch, 2.

Economic products described—Continued.
Gold, Sutton, 1.
Gold, Thomas, 2.
Gold, Titcomb, 1.
Gold, Turner, 12, 14, 15.
Gold, Vicaire, 1.
Gold, Villarello, 9.
Gold, Washburne, 2, 3.
Gold, Watson (R. L.), 1.
Gold, Weatherby, 1.
Gold, Weed, 3, 5, 14, 19, 29, 35.
Gold, Weeks, 2.
Gold, Winchell (A. N.), 4.
Gold, Winchell (H. V.), 5.
Gold, Woodman, 3, 4.
Gold, Wright (F. E. and C. W.), 1.
Gold, Wright (C. W.), 1, 2.
Gold, Yung and McCaffery, 1.
Grahamite, Eldridge, 1.
Grahamite, Merrill (G. P.), 3.
Granite, Eckel, 6.
Granite, Finlay (G. I.), 3.
Granite, Mathews, 1.
Granite, Newland, 2.
Granite, Perkins, 1, 6.
Granite, Pratt, 8.
Granite, Richardson (C. H.), 2.
Granite, Shedd, 2.
Granite, Smith (G. O.), 17.
Granite, Taff, 3.
Granite, Watson (T. L.), 8.
Graphite, Bateman, 1.
Graphite, Brumell, 1.
Graphite, Carter (W. E. H.), 1.
Graphite, Day, 6–11.
Graphite, Ells (R. W.), 8, 18, 20.
Graphite, Keith, 12.
Graphite, Kemp, 27.
Graphite, Merrill (G. P.), 12.
Graphite, Miller (W. G.), 6.
Graphite, Newland, 2.
Graphite, Ogilvie, 6.
Graphite, O'Harra, 2.
Graphite, Pratt, 8, 10, 11.
Gravel, Sarle, 3.
Greensand marl, Day, 8.
Grindstones, whetstones, and hones, Merrill (G. P.), 3.
Guano, Merrill (G. P.), 12.
Gum copal, Merrill (G. P.), 3.
Gypsum, Adams (G. I.), 14.
Gypsum, Bell (J. M.), 2.
Gypsum, Blake (W. P.), 14.
Gypsum, Boutwell, 3, 6.
Gypsum, Brady, 1.
Gypsum, Darton, 1, 14, 15, 18.
Gypsum, Darton and O'Harra, 1.
Gypsum, Day, 6–11.
Gypsum, Diehl, 1.
Gypsum, Eckel, 19, 22, 23.
Gypsum, Fairbanks, 6.
Gypsum, Gould, 10, 11.
Gypsum, Gregory (W. M.), 1–3.
Gypsum, Grimsley, 4 7, 8.
Gypsum, Herrick (C. L.), 6.
Gypsum, Herrick (H. N.), 1.
Gypsum, Hill (B. F.), 3.

Economic products described—Continued.
Gypsum, Knight (W. C.), 9.
Gypsum, Lakes, 61.
Gypsum, Lindgren, 4, 20.
Gypsum, Louderback, 2, 5.
Gypsum, Merrill (G. P.), 3, 12.
Gypsum, Newland, 2.
Gypsum, Parsons, 1, 2, 4.
Gypsum, Peppel, 1.
Gypsum, Richardson (G. B.), 7.
Gypsum, Rowe, 5.
Gypsum, Sarle, 3.
Gypsum, Sherwin, 2.
Gypsum, Slosson and Moudy, 1.
Gypsum, Weed, 25.
Gypsum, Wilder, 3, 4, 6.
Halite, sodium chloride or common salt, Merrill (G. P.), 3.
Hausmannite, Merrill (G. P.), 3.
Hematite, Keith, 4.
Hiddenite, Pratt, 8.
Hydrocarbons, Aguilera, 3.
Ilmenite, menaccanite, or titanic iron, Merrill (G. P.), 3.
Iron, Aguilera, 3.
Iron, Ball and Smith, 1.
Iron, Barlow, 7.
Iron, Bayley, 1.
Iron, Bell (J. M.), 2.
Iron, Beyer, 1, 2.
Iron, Blakemore, 2.
Iron, Bowron, 1.
Iron, Boutwell, 5.
Iron, Brewer (W. M.), 2, 14.
Iron, Burchard, 3.
Iron, Capilla, 1.
Iron, Carlyle, 1.
Iron, Carter (W. E. H.), 1.
Iron, Chance, 2.
Iron, Clements, 3.
Iron, Coleman, 4, 7, 18.
Iron, Coleman and Willmott, 1, 2.
Iron, Courtis, 1.
Iron, Crosby, 2, 3.
Iron, Culbert, 1.
Iron, Darton, 18.
Iron, Day, 5, 7–11.
Iron, Diller, 14, 16, 20.
Iron, Dumble, 3, 6.
Iron, Eckel, 30, 33, 35, 36, 37.
Iron, Ells (R. W.), 7, 8, 20.
Iron, Fairbanks, 7.
Iron, Farrington, 13.
Iron, Fletcher, 6.
Iron, Garrison, 1, 2.
Iron, Gilpin, 1.
Iron, Grant (U. S.), 6.
Iron, Hayes (C. W.), 1, 5.
Iron, Hayes and Eckel, 1.
Iron, Hayes and Ulrich, 1.
Iron, Hayes, Vaughan, and Spencer, 1
Iron, Hille, 1–3.
Iron, Hulst, 1.
Iron, Ingall, 4.
Iron, Jennings (E. P.), 2.
Iron, Johnson (J. E., jr.), 1.
Iron, Keith, 12.
Iron, Kemp, 31.
Iron, Keyes, 42.
Iron, Kümmel, 3, 5.
Iron, Lane, 8.
Iron, Leith, 4–6, 10–12, 14, 15.
Iron, Lindgren, 4, 9, 28.
Iron, McCaskey, 1.
Iron, Macco, 1.
Iron, Mathews, 1.
Iron, Maxwell, 1.
Iron, Mickle, 1.
Iron, Miller (W. G.), 2, 3, 6, 9, 15.
Iron, Mills, 2.
Iron, Newland, 2.
Iron, Obalski, 1.
Iron, Ogilvie, 6.
Iron, O'Harra, 2.
Iron, Pratt, 8, 10, 11.
Iron, Rangel, 1.
Iron, Ries, 8, 11.
Iron, Rohn, 1.
Iron, Rose, 1, 2.
Iron, Shedd, 1.
Iron, Smith (W. D.), 1.
Iron, Smith (W. N.), 1.
Iron, Smith (W. S. T.), 1.
Iron, Smith and McCalley, 1.
Iron, Smith and Willis, 1.
Iron, Souder, 1.
Iron, Spencer (A. C.), 1, 12.
Iron, Spurr, 5, 12.
Iron, Thomas, 3, 4.
Iron, Tippenhauer, 2.
Iron, Van Hise, 2, 14.
Iron, Villarello and Böse, 1.
Iron, Warwick, 1.
Iron, Weatherbe, 1.
Iron, Weidman, 5, 6.
Iron, Willmott, 4.
Iron, Winchell (H. V.), 3.
Iron, Winchell (N. H.), 7, 23, 24.
Iron, Woodbridge, 1.
Kainite, Merrill (G. P.), 3.
Kalinite, Merrill (G. P.), 3.
Kaolin, Aguilera, 3.
Kaolin, Hopkins (T. C.), 1.
Kaolin, Lindgren, 4.
Kaolin, Mathews, 1.
Kaolin, Smith and McCalley, 1.
Kiesrite, Merrill (G. P.), 3.
Lazurite, lapis lazuli, or native ultramarine, Merrill (G. P.), 3.
Lead, Adams (G. I.), 12, 15.
Lead, Aguilera, 3.
Lead, Aiken, 1.
Lead, Argall (P.), 2.
Lead, Bain, 2, 11, 12, 14, 16.
Lead, Ball and Smith, 1.
Lead, Bell (R. N.), 3, 4.
Lead, Boutwell, 4, 14.
Lead, Branner, 2.
Lead, Cahill, 1.
Lead, Carter (W. E. H.), 1.
Lead, Crook, 2.
Lead, Day, 5, 7–11.
Lead, Ellis (E. E.), 1.

Economic products described—Continued.

Lead, Emmons (S. F.), 3.
Lead, Finlay (J. R.), 1, 3.
Lead, Grant (U. S.), 5, 9, 10.
Lead, Haworth, 1.
Lead, Hedburg, 1.
Lead, Keith, 1.
Lead, Keyes, 20, 47.
Lead, Lakes, 45, 47, 50, 54.
Lead, Lee (H. A.), 1.
Lead, Lindgren, 21.
Lead, Malcomson, 1.
Lead, Miller (A. M.), 4.
Lead, Nason, 4.
Lead, Nicholson, 1.
Lead, O'Harra, 2.
Lead, Phillips (W. B.), 3, 9.
Lead, Ransome, 16–18.
Lead, Smith (W. S. T.), 2, 3.
Lead, Smith and Standley, 1.
Lead, Smyth (C. H.), 4.
Lead, Ulrich and Smith, 1.
Lead, Van Hise and Bain, 1.
Lead, Van Horn, 1.
Lead, Watson (T. L.), 17.
Lead, Wheeler (H. A.), 1.
Lead, Yung and McCaffery, 1.
Lignite, Bell (J. M.), 2.
Lignite, Burchard, 1, 2.
Lignite, Merrill (G. P.), 12.
Lignite, Phillips (W. B.), 12.
Lignite, Russell, 2.
Lignite, Storrs (L. S.), 1.
Lignite, Tippenhauer, 2.
Lignite, Wilder, 1, 2, 8, 10.
Lignite, Wood (L. H.), 1.
Lignite, Woodworth, 8.
Lime, Blatchley, 7.
Lime, Keith, 9.
Lime, Norton, 1.
Lime, Ries, 4.
Limestone, Ashley, 2.
Limestone, Bassler, 2.
Limestone, Campbell (M. R.), 8.
Limestone, Clapp, 4.
Limestone, Darton, 18.
Limestone, Diller, 15.
Limestone, Donald, 1, 2.
Limestone, Eckel, 6, 34.
Limestone, Fisher (C. A.), 2.
Limestone, Fuller and Alden, 2.
Limestone, Gregory (W. M.), 1, 2.
Limestone, Hayes (C. W.), 5.
Limestone, Knight (N.), 7.
Limestone, Landes, 2.
Limestone, Lane, 8, 9, 41.
Limestone, Lindgren, 4.
Limestone, Martin (G. C.), 2.
Limestone, Merrill (G. P.), 12.
Limestone, Miller (W. G.), 13.
Limestone, Newland, 2.
Limestone, Orton and Peppel, 1.
Limestone, Pratt, 8.
Limestone, Ries, 4.
Limestone, Schneider, 2.
Limestone, Shedd, 2.
Limestone, Siebenthal, 3.
Limestone, Smith (W. S. T.), 1.
Limestone, Stose, 2.
Limestone, Taff, 14.
Limestone, Ulrich, 7.
Limestone, Wells (J. W.), 5.
Limestone, bituminous, Taff, 6.
Limestone, lithographic, Hoen, 1.
Limestones, mortars, and cements, Merrill (G. P.), 3.
Limonite, Weed, 38.
Linnæite, Merrill (G. P.), 3.
Lithographic limestones, Merrill (G. P.), 3.
Lithium, Day, 7–11.
Lithographic stone, Day, 7.
Lithographic stone, Ulrich, 3.
Löllingite, leucopyrite, Merrill (G. P.), 3.
Magnesite, Day, 8–11.
Magnesite, Merrill (G. P.), 3.
Magnesite, Spinks, 1.
Magnetite, Keith, 4.
Magnetite, Kemp, 31.
Manganese, Aguilera, 3.
Manganese, Blake (W. P.), 12.
Manganese, Catlett, 2.
Manganese, Chibas, 1.
Manganese, Church, 1.
Manganese, Darton, 18.
Manganese, Day, 5, 7–11.
Manganese, Eckel, 35.
Manganese, Hayes (C. W.), 11.
Manganese, Hayes, Vaughan, and Spencer, 1.
Manganese, Jennison, 1.
Manganese, Lindgren, 4.
Manganese, Merrill (G. P.), 3, 12.
Manganese, O'Harra, 2.
Manganese, Pratt, 8.
Manganese, Souder, 1.
Manganese, Spencer (A. C.), 3, 8.
Manganese, Watson (T. L.), 9.
Manganese, Wiel, 1.
Manganese, Williams (E. G.), 1.
Manganese, Wolff, 2.
Manganite, Merrill (G. P.), 3.
Manjak, Merrill (G. P.), 3.
Marble, Byrne, 1, 2.
Marble, Eckel, 6, 34.
Marble, Keith, 1, 6, 9.
Marble, Lyon, 1.
Marble, Newland, 2.
Marble, Perkins, 1, 6.
Marble, Pratt, 7, 8.
Marble, Richardson (C. H.), 2.
Marble, Shedd, 2.
Marble, Smith and McCalley, 1.
Marl, Blatchley and Ashley, 1.
Marl, Davis (C. A.), 1, 2.
Marl, Eckel, 34.
Marl, Ells (R. W.), 6.
Marl, Fall, 1, 2.
Marl, Lane, 21.
Marl, Leverett, 3.
Marl (bog lime), Hale, 1.
Mercury, Aguilera, 3.

Economic products described—Continued.
Mercury, Villarello, 1, 6.
Mica, Carter (W. E. H.), 1.
Mica, Cirkel, 2, 4.
Mica, Colles, 1.
Mica, Corkill, 1.
Mica, Day, 6–9, 11.
Mica, Ells (R. W.), 7, 8, 20, 21.
Mica, Keith, 4, 12.
Mica, Merrill (G. P.), 3, 12.
Mica, Miller (W. G.), 6.
Mica, O'Harra, 2.
Mica, Perkins, 6.
Mica, Pratt, 8, 10, 11.
Mica, Smith and McCalley, 1.
Millstones, Newland, 2.
Mineral paint, Day, 6–11.
Mineral paint, Newland, 2.
Mineral water, Babcock and Minor, 1.
Mineral water, Blatchley, 3.
Mineral water, Day, 6–11.
Mineral water, Eisele, 1.
Mineral water, Hessler, 1.
Mineral water, Merrill (G. P.), 12.
Mineral water, Newland, 2.
Mineral water, Peter, 1.
Mineral water, Todd (J. E.), 5.
Mirabilite, or Glauber salt, Merrill (G. P.), 3.
Molybdenite, Crook, 3.
Molybdenite, Merrill (G. P.), 3.
Molybdenite, Wells, 2.
Molybdenum, Aguilera, 3.
Molybdenum, Day, 7–9.
Molybdenum, Johnston, 1.
Molybdenum, Smith (G. O.), 16.
Molybdenum, Willimott, 2.
Monazite, Day, 8–11.
Monazite, Merrill (G. P.), 3.
Monazite, Pratt, 8, 10, 11.
Natron, the nitrum of the ancients, Merrill (G. P.), 3.
Natural gas, Adams (G. I.), 10.
Natural gas, Adams, Haworth, and Crane, 1.
Natural gas, Bell (Robert), 6.
Natural gas, Bishop (I. P.), 1, 2.
Natural gas, Blatchley, 6
Natural gas, Bownocker, 2, 3, 5.
Natural gas, Butts, 4, 6.
Natural gas, Campbell (M. R.), 8, 9.
Natural gas, Chalmers, 4.
Natural gas, Corkill, 2.
Natural gas, Coste, 1–3.
Natural gas, Darton, 18.
Natural gas, Day, 6–11.
Natural gas, Fuller (M. L.), 5, 9.
Natural gas, Grimsley, 1, 2.
Natural gas, Haworth, 2.
Natural gas, Haworth and McFarland, 1.
Natural gas, Hoeing, 1.
Natural gas, Ingall, 1.
Natural gas, Kindle, 7.
Natural gas, Kinney, 1, 2.
Natural gas, Lane, 10, 31, 46.
Natural gas, Leach (J. C.), 1, 2.

Economic products described—Continued.
Natural gas, McFarland, 1.
Natural gas, Merrill (G. P.), 12.
Natural gas, Mickle, 2.
Natural gas, Newland, 2.
Natural gas, Nickles, 2.
Natural gas, Oliphant, 1.
Natural gas, Richardson (G. B.), 3, 6.
Natural gas, Schrader and Haworth, 1.
Natural gas, Stone (R. W.), 2, 6–8.
Natural gas, Todd (J. E.), 5.
Natural gas, Udden, 2.
Natural gas, White (I. C.), 9, 10.
Natural gas, Woolsey, 3.
Natural gas, Yates (J. A.), 1.
Nickel, Aguilera, 3.
Nickel, Barlow, 6, 8.
Nickel, Carter (W. E. H.), 1.
Nickel, Coleman, 14, 18, 19.
Nickel, Day, 5, 7–9.
Nickel, Dickson, 4.
Nickel, Ells (R. W.), 17.
Nickel, Keith, 9.
Nickel, Ledoux, 1.
Nickel, Miller (W. G.), 6, 8, 11, 13.
Nickel, Silver, 1.
Nickel, Spurr, 12.
Niter, potassium nitrate, Merrill (G. P.), 3.
Nitre, Merrill (G. P.), 12.
Nitrate, Wagenen, 1.
Nitro-calcite, Merrill (G. P.), 3.
Ocher, Chester, 1.
Ocher, Ells (R. W.), 8.
Ocher, Hayes (C. W.), 1.
Ocher, Merrill (G. P.), 3, 12.
Ocher, Pratt, 8.
Ocher, Watson (T. L.), 10.
Oil, Adams (G. I.), 2.
Oil, Bishop (I. P.), 1.
Oil, Blatchley, 2.
Oil, Bownocker, 3.
Oil, Cooper (A. S.), 1.
Oil, Gordon (C. H.), 2.
Oil, Harris, 4.
Oil, Hayes, Vaughan, and Spencer, 1.
Oil, Hill (R. T.), 5.
Oil, Hager, 1.
Oil, Haworth, 2.
Oil, Ingall, 1.
Oil, Knight and Slosson, 2.
Oil, Knight (W. C.), 2, 5.
Oil, Lakes, 10, 11, 14, 15, 17, 21, 24.
Oil, Lane, 10.
Oil, Mabery, 1.
Oil, Ohly, 1.
Oil, Phillips (W. B.), 2.
Oil, Richardson and Wallace, 1.
Oil, Thiele, 1.
Oil, Willis, 4.
Onyx-marble, Ordoñez, 4.
Opal, Aguilera, 3.
Ornamental stone, Shedd, 2.
Orpiment, auripigment, Merrill (G. P.), 3.
Ozokerite, Merrill (G. P.), 12.

Economic products described—Continued.
Ozokerite, mineral wax; native paraffin, Merrill (G. P.), 3.
Peat, Chalmers, 5, 7.
Peat, Day, 11.
Peat, Ells (R. W.), 8.
Peat, Lakes, 96.
Peat, Merrill (G. P.), 12.
Peat, Parsons, 3.
Peat, Ries, 7.
Peat, Sarle, 3.
Petroleum, Adams (G. I.), 10.
Petroleum, Adams, Haworth, and Crane, 1.
Petroleum, Alcala, 1.
Petroleum, Bartow and McCollum, 1.
Petroleum, Baxter, 1.
Petroleum, Bell (Robert), 6.
Petroleum, Bishop (I. P.), 2.
Petroleum, Blatchley, 4, 6.
Petroleum, Blatchley and Sheak, 1.
Petroleum, Boutwell, 11.
Petroleum, Bownocker, 2, 5.
Petroleum, Butts, 4.
Petroleum, Campbell (M. R.), 11.
Petroleum, Chalmers, 4.
Petroleum, Claypole, 3.
Petroleum, Corkill, 2.
Petroleum, Coste, 1–4.
Petroleum, Darton, 1, 14, 18.
Petroleum, Day (D. T.), 2, 3.
Petroleum, Day, 6–11.
Petroleum, Dumble, 2, 8.
Petroleum, Eldridge, 4.
Petroleum, Ells (R. W.), 12.
Petroleum, Fenneman, 4, 5, 7–9.
Petroleum, Fishback, 1.
Petroleum, Frazer, 9.
Petroleum, Fuller (M. L.), 3, 5.
Petroleum, Fuller and Alden, 1.
Petroleum, Grimsley, 1.
Petroleum, Griswold, 1, 2.
Petroleum, Hayes (C. W.), 8, 13.
Petroleum, Hayes and Kennedy, 1.
Petroleum, Heurteau, 1.
Petroleum, Hill (R. T.), 9.
Petroleum, Hoeing, 1.
Petroleum, Kilham, 1.
Petroleum, Knight and Slosson, 4.
Petroleum, Laguerenne, 1.
Petroleum, Lakes, 15, 39, 48.
Petroleum, Landes, 2.
Petroleum, Lane, 31, 46.
Petroleum, Lucas (A. F.), 1.
Petroleum, McCallie, 7.
Petroleum, Martin (G. C.), 3, 11, 14.
Petroleum, Merrill (G. P.), 3, 12.
Petroleum, Mickle, 2.
Petroleum, Newland, 2.
Petroleum, Oliphant, 2.
Petroleum, Otsuka, 1.
Petroleum, Phillips (W. B.), 1.
Petroleum, Plotts, 1.
Petroleum, Prutzman, 1.
Petroleum, Richardson (G. B.), 7.
Petroleum, Russell, 8.
Petroleum, Schrader and Haworth, 1.

Economic products described—Continued.
Petroleum, Stoess, 1.
Petroleum, Stone (R. W.), 2, 6.
Petroleum, Taff and Shaler, 1.
Petroleum, Todd (J. E.), 5.
Petroleum, Villarello, 3.
Petroleum, White (I. C.), 9.
Petroleum, Willey, 1, 2.
Petroleum, Woolsey, 3.
Phosphate, Branner and Newsom, 1.
Phosphate, Brown (L. P.), 1.
Phosphate, Chazal, 1.
Phosphate, Day, 6–11.
Phosphate, Eckel, 3, 19.
Phosphate, Hayes (C. W.), 3, 15.
Phosphate, Hayes and Ulrich, 1.
Phosphate, Memminger, 1.
Phosphate, Merrill (G. P.), 12.
Phosphate, Ochsenius, 2.
Phosphate, Phillips (W. B.), 4.
Phosphate, Ruhm, 1.
Phosphate, Safford, 1.
Phosphate, Smith and McCalley, 1.
Platinum, Brock, 6.
Platinum, Day, 1, 7–11.
Platinum, Emmons (S. F.), 11.
Platinum, Kemp, 11, 20.
Platinum, Knight, 4.
Platinum, Dickson, 5.
Platinum, Spurr, 12.
Platinum, Wells and Penfield, 1.
Platinum minerals, Diller, 11.
Polianite, Merrill (G. P.), 3.
Polyhalite, Merrill (G. P.), 3.
Portland cement, Bain, 15.
Portland cement, Bassler, 2, 3.
Portland cement, Catlett, 3.
Portland cement, Day, 6, 7, 10.
Portland cement, Eckel, 4, 25, 32, 34, 39.
Portland cement, Eckel and Crider, 1.
Portland cement, Fitzhugh, 1.
Portland cement, Haworth and Schrader, 1.
Portland cement, Merrill (G. P.), 3, 12.
Portland cement, Russell, 6.
Portland cement, Smith (E. A.), 3, 8.
Portland cement, Taff, 5, 14, 15.
Portland cement, Ulrich, 7.
Portland cement, Wilder, 3.
Precious stones, Day, 6–11.
Precious stones, Keith, 12.
Precious stones, Pratt, 10, 11.
Psilomelane, Merrill (G. P.), 3.
Pumice, Merrill (G. P.), 3, 12.
Pyrite, Day, 6–11.
Pyrite, Eckel, 16, 40.
Pyrite, Meissner, 1.
Pyrite, Merrill (G. P.), 12.
Pyrite, Miller (W. G.), 6.
Pyrite, Newland, 2.
Pyrite, Pratt, 8.
Pyrite, Smith and McCalley, 1.
Pyrites, Merrill (G. P.), 3.
Pyrolusite, Merrill (G. P.), 3.
Pyrophyllite, Pratt, 8, 10.

Economic products described—Continued.
Pyrophyllite, agalmatolite, and pagodite, Merrill (G. P.), 3.
Quartz, Day, 6.
Quartz, Merrill (G. P.), 3.
Quartz, Newland, 2.
Quartz, Pratt, 8, 10, 11.
Quicksilver, Day, 5, 7–11.
Quicksilver, Demaret, 2.
Quicksilver, Dennis, 2.
Quicksilver, Forstner, 2.
Quicksilver, Haverstock, 1.
Quicksilver, Hill (B. F.), 1.
Quicksilver, Hill (R. T.), 8.
Quicksilver, Kirk, 1.
Quicksilver, Kirk and Malcolmson, 1.
Quicksilver, Monckton, 2.
Quicksilver, Osmont, 1.
Quicksilver, Phillips (W. B.), 6, 8, 10, 11, 14.
Quicksilver, Spalding, 1.
Quicksilver, Turner, 17.
Quicksilver, Wendeborn, 2.
Realgar, Merrill (G. P.), 3.
Retinite, Merrill (G. P.), 3, 12.
Rhodochrosite; dialogite, Merrill (G. P.), 3.
Rhodolite, Pratt, 8.
Rhodonite, Merrill (G. P.), 3.
Road material, Darton and Keith, 1.
Road materials, Buckley, 3.
Road materials, Landes, 2.
Road materials, McCallie, 3.
Road materials, Martin (G. C.), 2.
Road materials, Mathews, 1.
Roman cement, Merrill (G. P.), 3.
Roofing slate, Nevius, 1.
Ruby, Kunz, 2.
Ruby, Pratt, 8.
Rutile, Merrill (G. P.), 3, 6, 12.
Salt, Aguilera, 3.
Salt, Bishop (I. P.), 2.
Salt, Bownocker, 6.
Salt, Clendenin, 1.
Salt, Darton, 18, 21.
Salt, Day, 6–11.
Salt, Eckel, 11, 19.
Salt, Gould, 7.
Salt, Hager, 1.
Salt, Herrick (C. L.), 6.
Salt, Holder, 1.
Salt, Kindle, 7.
Salt, Lane, 8, 12.
Salt, Merrill (G. P.), 12.
Salt, Newland, 2.
Salt, Richardson (G. B.), 4, 7.
Salt, Veatch, 1.
Samarskite, Merrill (G. P.), 3.
Sand, Ashley, 2.
Sand, Barbour (E. H.), 8.
Sand, Kümmel, 9.
Sand, Newland, 2.
Sand, Sarle, 3.
Sand, molding, Eckel, 14.
Sandstone, Ashley, 2.
Sandstone, Dickinson, 1.
Sandstone, Eckel, 6.

Economic products described—Continued.
Sandstone, Lane, 8.
Sandstone, Martin (G. C.), 2.
Sandstone, Newland, 2.
Sandstone, Richardson (G. B.), 3.
Sandstone, Shedd, 2.
Sandstone, Smith (W. S. T.), 1.
Sandstone, bituminous, Taff, 6.
Sapphire, Kunz, 3.
Sapphire, Pratt, 8.
Scheelite, Merrill (G. P.), 3.
Selenium, Aguilera, 3.
Sepiolite; meerschaum, Merrill (G. P.), 3.
Serpentine, Marsters, 2, 4.
Serpentine, Pratt, 8.
Serpentine, Shedd, 2.
Shale, Eckel, 34.
Silver, Aguilera, 3.
Silver, Aiken, 1.
Silver, Argall (P.), 2.
Silver, Bagg, 8.
Silver, Bell (R. N.), 3.
Silver, Blake (W. P.), 8.
Silver, Boutwell, 4, 8, 12, 13.
Silver, Brewer, 16.
Silver, Byrne, 3.
Silver, Brock, 8.
Silver, Cahill, 1.
Silver, Carter (W. E. H.), 1.
Silver, Church, 1.
Silver, Clere, 1.
Silver, Comstock (T. B.), 1.
Silver, Cummings, 1.
Silver, Cook (E. H.), 1.
Silver, Darton, 18.
Silver, Day, 5, 7–11.
Silver, Dern, 1.
Silver, Diller, 16.
Silver, Dominian, 1.
Silver, Ells, 20.
Silver, Emmons (S. F.), 3, 16.
Silver, Emmons (W. H.), 1.
Silver, Farrington, 13.
Silver, Finlay (J. R.), 1, 3.
Silver, Flores, 1.
Silver, Halse, 4, 5.
Silver, Hardman, 1.
Silver, Henrich, 1.
Silver, Hill (R. T.), 4, 10, 14.
Silver, Irving, 3, 4, 6, 7.
Silver, Irving and Emmons, 1.
Silver, Jaggar and Palache, 1.
Silver, Keyes, 32.
Silver, Kirby, 2.
Silver, Knapp (S. A.), 1.
Silver, Lakes, 45, 47, 50, 51, 54, 68, 72.
Silver, Lee (H. A.), 1.
Silver, Lindgren, 4, 7, 8, 21, 26.
Silver, Lindgren and Drake, 2.
Silver, Lowry, 1.
Silver, McCormick, 1.
Silver, Malcolmson, 1.
Silver, Mendenhall, 1.
Silver, Miller (G. W.), 2.
Silver, Miller (W. G.), 8, 11, 13.
Silver, O'Harra, 2.

Economic products described—Continued.
  - Silver, Ordoñez, 3, 11.
  - Silver, Pratt, 8, 10, 11.
  - Silver, Purington, 1, 3, 5.
  - Silver, Ransome, 1–3, 6, 13, 16–18.
  - Silver, Spencer (A. C.), 10.
  - Silver, Spurr, 9, 11, 18, 27, 29.
  - Silver, Spurr and Garrey, 1.
  - Silver, Stretch, 3.
  - Silver, Udden (Johan A.), 1.
  - Silver, Vicaire, 1.
  - Silver, Villafaña, 1.
  - Silver, Villarello, 9.
  - Silver, Weatherby, 1.
  - Silver, Weed, 5.
  - Silver, Yung and McCaffery, 1.
  - Skutterudite, Merrill (G. P.), 3.
  - Slate, Dale, 2, 4, 8.
  - Slate, Eckel, 24, 27, 28.
  - Slate, Hayes (C. W.), 5.
  - Slate, Hitchcock (C. H.), 10.
  - Slate, Newland, 2.
  - Slate, Perkins, 1, 2, 6.
  - Slate, Richardson (C. H.), 2.
  - Smaltite, Merrill (G. P.), 3.
  - Soapstone, Day, 6–11.
  - Soapstone, Keith, 4, 9, 12.
  - Soapstone, Pratt, 11.
  - Soda, Darton, 18.
  - Soda niter, Merrill (G. P.), 3.
  - Soils, Darton, 7, 8, 26.
  - Soils, Darton and O'Harra, 1.
  - Soils, Darton and Smith, 1.
  - Soils, Fairbanks, 7.
  - Soils, Fuller and Clapp, 2.
  - Soils, Hall (C. W.), 2.
  - Soils, Hayes (C. W.), 5.
  - Soils, Hayes and Ulrich, 1.
  - Soils, Lakes, 40.
  - Soils, Norton, 1.
  - Soils, Russell, 23.
  - Soils, Smith and McCalley, 1.
  - Soils, Taff, 6.
  - Soils, Todd (J. E.), 10, 11.
  - Soils, Weidman, 3.
  - Spodumene, O'Harra, 2.
  - Spodumene and petalite, Merrill (G. P.), 3.
  - Steatite, talc, and soapstone, Merrill (G. P.), 3.
  - Steel-hardening metals, Day, 11.
  - Stone, Day, 6–11.
  - Stone, Newland, 2.
  - Strontianite, Ells (R. W.), 7.
  - Strontianite, Merrill (G. P.), 3.
  - Strontium, Aguilera, 3.
  - Strontium, Day, 8.
  - Succinite: amber, Merrill (G. P.), 3.
  - Sulphur, Adams (G. I.), 16.
  - Sulphur, Aguilera, 3.
  - Sulphur, Caracristi, 1.
  - Sulphur, Day, 6–11.
  - Sulphur, Kerr, 1.
  - Sulphur, Merrill (G. P.), 12.
  - Sulphur, Phillips (W. B.), 5.
  - Sulphur, Richardson (G. B.), 4, 8.
  - Sychnodymite, Merrill (G. P.), 3.

Economic products described—Continued.
  - Talc, Blasdale, 1.
  - Talc, Day, 7–11.
  - Talc, Keith, 7, 9, 12.
  - Talc, Merrill (G. P.), 12.
  - Talc, Miller (W. G.), 6.
  - Talc, Newland, 2.
  - Talc, Peck, 6.
  - Talc, Pratt, 7, 8, 10, 11.
  - Tantalum, Pratt, 11.
  - Tar, Day, 9–11.
  - Tellurium, Aguilera, 3.
  - Thenardite, Merrill (G. P.), 3.
  - Tin, Aguilera, 3.
  - Tin, Bell (R. N.), 2.
  - Tin, Bell (Robert), 4.
  - Tin, Brooks, 1, 2, 8.
  - Tin, Collier, 1, 5, 7, 11.
  - Tin, Darton, 18, 26.
  - Tin, Day, 7, 11.
  - Tin, Fawns, 1.
  - Tin, Garrison, 3.
  - Tin, Graton, 3.
  - Tin, Hess and Graton, 1.
  - Tin, Irving, 3.
  - Tin, Irving and Emmons, 1.
  - Tin, Nevius, 3.
  - Tin, O'Harra, 2.
  - Tin, Pratt, 10, 11.
  - Tin, Pratt and Sterrett, 1.
  - Tin, Rickard (E.), 1.
  - Tin, Struthers and Pratt, 1.
  - Tin, Weed, 4, 15.
  - Titanium, Day, 8.
  - Topaz, Aguilera, 3.
  - Tourmaline, Kunz, 2.
  - Trap, Newland, 2.
  - Triphylite and lithiophilite, Merrill (G. P.), 3.
  - Tripoli, Merrill (G. P.), 3, 12.
  - Tripolite, Crosby, 1.
  - Trona: urao, Merrill (G. P.), 3.
  - Tschermigite, Merrill (G. P.), 3.
  - Tufa, Shedd, 2.
  - Tuff, Shedd, 2.
  - Tungsten, Day, 5, 7–9.
  - Tungsten, Hobbs, 16.
  - Tungsten, Irving and Emmons, 1.
  - Tungsten, Johnston, 1.
  - Tungsten, Merrill (G. P.), 12.
  - Tungsten, O'Harra, 2.
  - Tungsten, Rickard (F.), 3.
  - Tungsten, Simmons, 1.
  - Tungsten, Smith (F. D.), 1.
  - Tungsten, Weeks, 1, 8.
  - Turquoise, Johnson (D. W.), 4.
  - Ulexite: boronatrocalcite, Merrill (G. P.), 3.
  - Uintaite, Eldridge, 1.
  - Uintaite: gilsonite, Merrill (G. P.), 3.
  - Uraninite: pitchblende, Merrill (G. P.), 3.
  - Uranium, Boutwell, 9.
  - Uranium, Day, 7–9.
  - Uranium, Pratt, 11.
  - Vanadinite, Merrill (G. P.), 3.
  - Vanadium, Aguilera, 3.

Economic products described—Continued.
Vanadium, Boutwell, 9.
Vanadium, Caballero, 2.
Vanadium, Day, 7–9.
Volcanic ash, Darton, 18.
Volcanic ash, Rowe, 1.
Water power, Ashley, 2.
Water power, Flynn and Flynn, 1.
Water power, Hall (B. M.), 1.
Water power, Leverett, 3.
Water power, Pressey, 3.
Water supply, Babcock, 1, 2.
Water supply, Calvin, 1.
Water supply, Chalmers, 4.
Water supply, Darton, 1, 6, 8.
Water supply, Darton and Keith, 1.
Water supply, Gould, 3, 5.
Water supply, Gregory (W. M.), 1, 2.
Water supply, Harris, 3.
Water supply, Hills, 1.
Water supply, Johnson (W. D.), 1.
Water supply, McCaslin, 1.
Water supply, Nutter, 1.
Water supply, Russell, 2.
Water supply, Udden, 3.
Water supply, Upham, 1.
Water supply, Woolman, 1.
Whetstone, Schneider, 5.
Whetstones, Merrill (G. P.), 12.
Witherite, Merril (G. P.), 3.
Wolframite, Irving, 1, 3, 4.
Wolframite, Irving and Emmons, 1.
Wolframite, Raymond (R. W.), 2.
Wolframite and hübnerite, Merrill (G. P.), 3.
Wurtzilite, Merrill (G. P.), 3.
Yttrotantalite, Merrill (G. P.), 3.
Zinc, Adams (G. I.), 12, 15.
Zinc, Bain, 2, 11, 13, 14, 16.
Zinc, Ball and Smith, 1.
Zinc, Boutwell, 2.
Zinc, Branner, 3.
Zinc, Carter (W. E. H.), 1.
Zinc, Crook, 2.
Zinc, Crosby, 16.
Zinc, Day, 5, 7–11.
Zinc, Demaret, 1.
Zinc, Ellis (E. E.), 1.
Zinc, Emmons (S. F.), 3.
Zinc, Grant (U. S.), 5, 9, 10.
Zinc, Harwood, 1.
Zinc, Haworth, 1.
Zinc, Hedburg, 1.
Zinc, Higgins, 1.
Zinc, Keith, 1, 8.
Zinc, Keyes, 20, 48.
Zinc, Kümmel, 3, 5.
Zinc, Lakes, 52.
Zinc, Lindgren, 28.
Zinc, Miller (A. M.), 4.
Zinc, Newland, 2.
Zinc, Nicholson, 1.
Zinc, Phillips (W. B.), 3.
Zinc, Smith (W. S. T.), 2, 3.
Zinc, Smith and Standley, 1.
Zinc, Steele, 1.
Zinc, Ulrich and Smith, 1.

Economic products described—Continued.
Zinc, Van Hise and Bain, 1.
Zinc, Van Horn, 1.
Zinc, Watson (T. L.), 17.
Zinc, Wheeler (G. D.), 1.
Zinc, Wolff, 2.
Zircon, Day, 11.
Zircon, Merrill (G. P.), 3.
Zircon, Pratt, 8, 10, 11.

Florida.
Clays of the United States, Ries, 6.
Cement materials and industry of the United States, Eckel, 34.
Fresh-water springs in the ocean, Hitchcock (C. H.), 11.
Fuller's earth of Georgia and Florida, Vaughan, 12, 18.
Genera, subgenera, and sections of Pyramidellidæ, Dall and Bartsch, 2.
Gypsum deposits in Florida, Day (D. T.), 4.
New Conus from Tertiary, Aldrich, 3.
New species of Tertiary fossils, Aldrich, 2.
Oligocene of western Europe and southern United States, Maury, 1.
Recent elevation of Gulf coast, Vaughan, 1.
Tertiary fauna of Florida, Dall, 8.
Underground waters of Florida, Fuller, 25.
Union of Cuba with Florida, Spencer (J. W.), 11.
Water resources of Florida, Fuller (M. L.), 13.

Geologic formations described.
Abram's formation, pre-Cretaceous, California, Hershey, 2.
Abrigo limestone, Cambrian, Arizona, Ransome, 9, 11, 14.
Acadian, Cambric, New York, Clarke, 20.
Acadian division, Cambrian, Canada, Matthew (G. F.), 20.
Adams Lake series, Cambrian, Canada, Evans (H. F.), 2.
Admire shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Aftonian, Pleistocene, Iowa, Udden, 2.
Aftonian, Quaternary, New Jersey, Salisbury and others, 1.
Aftonian gravels, Pleistocene, Iowa, Calvin, 15.
Aftonian stage, Pleistocene, Iowa, Savage, 8.
Agawa formation, Algonkian, Minnesota, Clements, 3.
Agoniatites limestone, Devonian, New York, Clarke (J. M.), 2.
Agua Dulce formation, Pleistocene, Panama, Hershey 5.
Ahtell diorite, Alaska, Mendenhall, 8.
Ajax quartzite, Arizona, Church, 1.
Akins shale member Carboniferous, Indian Territory, Taff, 17.

Geologic formations described—Continued.

Alabama white limestone, Tertiary, Alabama, Casey, 2.

Albany granite, New Hampshire, Hawes, 2.

Albany division, Carboniferous, Texas, Taff, 4.

Albert shales, Carboniferous, Canada, Bailey (L. W.), 8.

Albertan, Pleistocene, Iowa, Udden, 2.

Albertan, Quaternary, New Jersey, Salisbury and others, 1.

Albertan, Pleistocene, Iowa, Beyer and Williams, 2.

Albuquerque marls, Pliocene, Tertiary, New Mexico, Reagan, 1.

Allegheny formation, Carboniferous, Maryland, Prosser, 3, 4.

Allegheny formation, Carboniferous, Maryland. Included in Coal Measures. Includes Brookville coal, Clarion coal, Clarion sandstone, Ferriferous limestone, Kittanning limestone, Kittanning sandstone, "Split-six" coal, Lower Kittanning coal, Middle Kittanning coal, Upper Kittanning coal, Lower Freeport sandstone, Lower Freeport limestone, Lower Freeport coal, Upper Freeport sandstone, Upper Freeport limestone and Bolivar clay, and Upper Freeport coal, Clark and Martin, 5.

Allegheny formation, Carboniferous, Maryland, Martin (G. C.), 1.

Allegheny formation, Carboniferous, Pennsylvania, Campbell, 6.

Allegheny formation (includes Bluebaugh coal, Parker coal, Davis coal, Thomas coal), Carboniferous, Maryland, White (D.), 7.

Allegheny formation (includes Brookville coal, Clarion coal, Lower Kittanning coal, Middle Kittanning coal, Upper Kittanning coal, Lower Freeport coal, Upper Freeport coal), Carboniferous, Pennsylvania, White and Campbell, 1.

Allegheny formation, Carboniferous, Pennsylvania, Campbell (M. R.), 8.

Allegheny formation (Lower Productive Coal Measures), Carboniferous, Ohio, Prosser, 10.

Allegheny series, Carboniferous, West Virginia, White (I. C.), 7.

Allegheny formation, Carboniferous, Pennsylvania, Campbell (M. R.), 18.

Allegheny formation, Carboniferous, Pennsylvania, Butts, 4, 6, 7.

Allegheny formation, Carboniferous, Pennsylvania, Richardson (G. B.), 3.

Allegheny formation, Carboniferous, Maryland, Clark and Martin, 6.

Allegheny formation, Carboniferous, Maryland, Martin, 16.

Allegheny formation, Carboniferous, Pennsylvania, Stone (R. W.), 6–8.

Geologic formations described—Continued.

Allegheny formation, Carboniferous (Pennsylvanian), Pennsylvania, Woolsey, 3.

Allen limestone, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.

Alloway clay, Tertiary, New Jersey, Kümmel and Knapp, 1.

Alma limestone, Carboniferous, Kansas, Prosser, 7.

Alpena limestone, Devonian, included in Traverse group, Michigan, Grabau, 5.

Alpreston quartzites (Flathead quartzites), Cambrian, Montana, Weed, 5.

Alta beds, Carboniferous, Texas, Udden (Johan A.), 11.

Altamaha grits, Tertiary, Georgia, Maury, 1.

Altamont (Parsons) limestone, Carboniferous, Kansas, Beede and Rogers, 1.

Altona dolomite, Permian, Oklahoma, Gould, 9.

Altyn limestone, Algonkian, Montana, Willis, 6.

Alum Bluff beds, Tertiary, Florida, Maury, 1.

Amboy stoneware clay, Cretaceous, New Jersey, Kümmel and Knapp, 1.

Americus limestone, Carboniferous, Kansas, Prosser, 7.

Americus limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.

Americus limestone, Carboniferous, Kansas, Smith (A. J.), 1, 2.

Americus beds, Carboniferous, Kansas, Wooster, 1, 2.

Ames, or Crinoidal, limestone, Carboniferous, West Virginia, White (I. C.), 7.

Ames limestone, Carboniferous, Ohio, Orton and Peppel, 1.

Ames limestone, Carboniferous, Pennsylvania, Butts, 4.

Ames, or Crinoidal, limestone, Carboniferous, Maryland, Clark and Martin, 6.

Ames limestone, Carboniferous, Pennsylvania, Clapp, 4.

Amsden formation, Carboniferous, Wyoming, Darton, 16, 18.

Anacacho formation, Cretaceous, Texas, Hill (R. T.), 3.

Anaktoovuk series, Cretaceous, Alaska, Schrader, 1, 3.

Angelina series, Tertiary, Texas, Hill (R. T.), 9.

Angola shale, Devonian, New York, Clarke, 19, 20.

Animikie formations, Canada, Smith (W. N.), 1.

Anona chalk, Cretaceous, Texas, Hill (R. T.), 3.

Antigua formation=White limestone, West Indies, Spencer (J. W.), 1, 3.

Antigua formation, West Indies, Spencer (J. W.), 6.

Geologic formations described—Continued.
- Antlers sands, Cretaceous, Texas, Hill (R. T.), 3.
- Antrim, Devonian, Michigan, Lane, 4.
- Antrim shales, Devonian, Michigan, Russell, 6.
- Apache group, Cambrian(?), Arizona, Ransome, 6, 13.
- Apache group, pre-Cambrian, Arizona, Lee (W. T.), 9.
- Apishapa formation, Cretaceous, Colorado, Hills, 1.
- Appanoose beds, Pennsylvania series, Iowa, Beyer and Young, 1.
- Appekunny argillite, Algonkian, Montana, Willis, 6.
- Aquia formation, Eocene, Tertiary, Maryland, Shattuck, 5.
- Aquia formation or stage, Eocene, Maryland, includes Piscataway and Paspotansa members or substages. Clark and Martin, 1.
- Arago formation, Tertiary, Oregon, Diller, 11.
- Arapahoe formation, Colorado, Lee, (W. T.), 2.
- Arapahoe formation, Tertiary, Colorado, Darton, 16, 18.
- Arbuckle limestone, Cambro-Silurian, Indian Territory, Taff, 3, 6, 13.
- Arbuckle limestone, Cambro-Ordovician, Oklahoma, Gould, 13, 14.
- Arcadia clays, Tertiary, Louisiana, Lerch, 2.
- Arietina formation, Cretaceous, Texas, Dumble, 12.
- Arikaree formation, Tertiary, Wyoming, Nebraska, Adams (G. I.), 4.
- Arikaree formation, Miocene, Tertiary, Nebraska, Barbour (E. H.), 8.
- Arikaree formation, Neocene, Tertiary, Wyoming, Smith (W. S. T.), 1.
- Arikaree formation, Tertiary, Nebraska, Darton, 10, 18.
- Arikaree formation, Tertiary, South Dakota, Reagan, 5.
- Arisaig formation, Silurian, Canada, Ami, 10.
- Arizona formation, included in Huronian, Blake (W. P.), 1.
- Arkadelphia beds, Cretaceous, Texas, Hill (R. T.), 3.
- Arkansan series, Carboniferous, Arkansas, Keyes, 18.
- Arlington diabase, Juratrias, New Jersey, Merrill and others, 1.
- Armuchee chert, Devonian, Georgia, Hayes, 5.
- Arnheim beds, Ordovician, Ohio, Indiana, and Kentucky, Foerste, 12.
- Arnheim beds, Ordovician, Kentucky, Nickles, 6.
- Arundel formation, Cretaceous, Maryland, Clark and Bibbins, 1.
- Asbury clay, Tertiary, New Jersey, Kümmel, and Knapp, 1.

Geologic formations described—Continued.
- Atascadero formation, Cretaceous, California, Fairbanks, 7.
- Atchison shales (Wabaunsee), Carboniferous, Nebraska, Barbour (E. H.), 8.
- Athens shale, Ordovician, Tennessee, Keith, 9, 11.
- Atoka formation, Carboniferous, Indian Territory, Taff, 2, 3.
- Atlantosaurus beds, Cretaceous, Rocky Mountain region, Lee (W. T.), 7.
- Atlantosaurus beds, Jurassic, Colorado and Wyoming, Hatcher, 14.
- Atlantosaurus beds, Jurassic-Cretaceous, Colorado and Wyoming, Williston, 25.
- Atwell sand, Devonian, Pennsylvania, Fuller, 3.
- Aubery group, Arizona, Reagan, 3.
- Aubrey and Super-Aubrey, Carboniferous, Utah, Huntington and Goldthwait, 1.
- Aubrey limestone and sandstone, Nevada, Spurr, 6.
- Aubrey formation, Utah, Huntington and Goldthwait, 2.
- Augusta formation, Carboniferous, Iowa, Eckel and Bain, 1.
- Austin chalk, Cretaceous, Texas, Dumble, 12.
- Austin chalk, Cretaceous, Texas, Hill (R. T.), 3.
- Austin chalk, Cretaceous, Texas, Hill and Vaughan, 1.
- Austin chalk, Cretaceous, Texas, Prather, 2.
- Avenal sandstones, Tertiary, California, Anderson, 7.
- Baird shales, Carboniferous, California, Diller, 12.
- Bakersville gabbro, Juratrias, North Carolina, Keith, 4.
- Bakersville gabbro, Triassic(?), North Carolina, Keith, 12.
- Baltimore gneiss, Algonkian, Pennsylvania, Bascom, 2.
- Baltimore gneiss, Maryland, Mathews and Miller, 1.
- Baltimore gneiss, Ordovician, Pennsylvania, Bascom, 3.
- Baltimore gneiss, pre-Cambrian, Maryland, Mathews, 6.
- Bandera shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
- Bandera shale, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
- Bandera shales, Carboniferous, Kansas, Beede and Rogers, 1.
- Bangor limestone, Carboniferous, Georgia, Hayes, 5.
- Bangor limestone, Carboniferous, Tennessee, Stevenson (J. J.), 4.
- Bangor limestone, Carboniferous, Georgia, McCallie, 9.
- Baptanodon beds, Jurassic, Wyoming, Williston, 25.

Geologic formations described—Continued.
- Baraboo quartzite, pre-Cambrian, Wisconsin, Weidman, 5.
- Barclay limestone, Carboniferous, Kansas, Beede, 6.
- Barclay limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
- Barnegat limestone, Cambro-Silurian, New York, Eckel, 6.
- Barnes conglomerate, Cambrian (?), Arizona, Ransome, 13.
- Barstow series, Tertiary, California, Hershey, 10.
- Basal limestone, Carboniferous, Texas, Hill (R. T.), 3.
- Basal beds, Eocene, Texas, Dumble, 13.
- Basal conglomerate, Pennsylvania, Peck, 3.
- Batesville, sandstone, Carboniferous, Arkansas, Adams (C. I.), 3, 15.
- Batesville sandstone, Carboniferous, Arkansas, Ulrich, 5.
- Batesville sandstone, Mississippian, Arkansas, Adams and Ulrich, 1.
- Bath-reef series, West Indies, Spencer (J. W.), 6.
- Baucari division, Tertiary, Arizona, Dumble, 7.
- Bay View Avenue sand, Cretaceous, New Jersey, Prather, 4.
- Bays formation, Silurian, Tennessee, Keith, 1.
- Bays sandstone, Silurian, Tennessee, Keith, 11.
- Beacon Hill formation, pre-Pleistocene, New Jersey, Salisbury, 1.
- Beacon Hill formation, Miocene, New Jersey, Smock, 1.
- Beacon Hill formation, Tertiary, New Jersey, Kümmel and Knapp, 1.
- Bearpaw shales, Cretaceous, Montana, Hatcher and Stanton, 1.
- Bear River formation, Cretaceous, Wyoming, Stanton, 4.
- Beaumont clays, Pleistocene, Texas, Hayes and Kennedy, 1.
- Beaver limestone, Cambrian, Alabama, Hayes, 5.
- Beaver limestone, Cambrian, Georgia, Watson (T. L.), 9.
- Becraft limestone, Devonian, New Jersey, Weller, 6.
- Becraft limestone, Devonian, New York, Grabau, 9.
- Becraft limestone, Devonian, New York, Van Ingen and Clark, 1.
- Becraft limestone, Devonic, Maryland, Schuchert, 7.
- Becraft limestone, Devonic, New York, Clarke, 20.
- Becraft limestone, New York, Shimer, 5.
- Bedford, Carboniferous, Indiana and Ohio, Siebenthal, 1.
- Bedford limestone, Carboniferous, Indiana, Cumings, 1.
- Bedford shale, Carboniferous, Ohio, Prosser, 1, 2.
- Bedford, Carboniferous, Pennsylvania, Stevenson (J. J), 4.
- Bedford limestone, Carboniferous, Indiana, Newsom, 3.
- Bedford oolitic limestone, Carboniferous, Indiana, Hopkins (T. C.), 8.
- Bedford oolitic limestone, Lower Carboniferous, Indiana, Ashley, 2.
- Bedford shale, Carboniferous, Ohio, Prosser, 10.
- Bedford oolitic limestone, Mississippian, Indiana, Hopkins (T. C.), 11.
- Beech granite, Archean, North Carolina and Tennessee, Keith, 4.
- Beekmantown, Ordovician, Vermont, Perkins, 7, 11.
- Beekmantown limestone, Champlainic, New York, Clarke, 20.
- Beekmantown stage, Ordovician, Pennsylvania, Collie, 3.
- Beekmantown, Ordovician, New York, Dale, 5.
- Beekmantown (Calciferous) formation, Ordovician, New York, Cushing, 10.
- Beekmantown formation, Ordovician, New York, Cushing, 9.
- Belfast bed, Silurian, Ohio, Prosser, 10.
- Bell shale, included in Traverse group, Devonian, Michigan, Grabau, 5.
- Bellton stage, Carboniferous, West Virginia, White (I. C.), 7.
- Bellevue beds, Ordovician, Ohio and Indiana, Nickles, 3.
- Bellevue beds, Ordovician, Indiana, Foerste, 11.
- Bellevue beds, Ordovician, Kentucky, Nickles, 6.
- Bellvale flags, Devonian, New York, Eckel, 6.
- Bellvale flags, Devonian, New Jersey, Kümmel and Weller, 2.
- Bellvale flags, Devonian, New Jersey, Weller, 6.
- Bellvale flags, Devonic, New York, Clarke, 20.
- Belly River beds, Cretaceous, Canada, Hatcher, 17.
- Belly River beds, Cretaceous, Canada, Hatcher and Stanton, 1.
- Benezette limestone, Carboniferous, Pennsylvania, Clapp, 4.
- Bennington limestone, Cretaceous, Indian Territory, Taff, 3, 6.
- Benton, Cretaceous, Montana, Willis, 6.
- Benton formation, Cretaceous, North Dakota, Babcock, 2.
- Benton group, Cretaceous, Kansas, Lindgren, 8.
- Benton sand, Tertiary, Missouri, Marbut, 1.
- Benton shales, Cretaceous, Colorado, Hatcher, 6.
- Benton formation, Cretaceous, Nebraska, Barbour (E. H.), 8.

Geologic formations described—Continued.
Benton formation, Cretaceous, Nebraska, Carmony, 1.
Benton formation, Cretaceous, South Dakota, Todd (J. E.), 9-11, 13, 15.
Benton formation, Cretaceous, South Dakota, Todd and Hall, 1, 2, 3.
Benton group, Cretaceous, Black Hills region, Wyoming and Colorado, Darton, 16, 18.
Benton shale, Cretaceous, Black Hills region, Jaggar, 5.
Benton group, Cretaceous, Nebraska, Burchard, 2.
Benton, Cretaceous, North Dakota, Leonard, 4.
Benton formation, Cretaceous, Colorado, Fenneman, 10.
Benton group, Cretaceous, Wyoming, Darton, 26.
Benwood limestone, Carboniferous, Pennsylvania, Clapp, 4.
Benwood limestone, Carboniferous, Pennsylvania, Stone (R. W.), 2, 6-8.
Berea grit, Carboniferous, Ohio, Prosser, 1, 10.
Berea grit, Carboniferous, Ohio, Bownocker, 3, 5.
Berea grit, Carboniferous, Ohio, Stevenson (J. J.), 4.
Berea shale, Carboniferous, Ohio, Stevenson (J. J.), 4.
Berea sandstone, Carboniferous, Ohio, Prosser and Cumings, 1.
Berea sandstone, Carboniferous, Pennsylvania, Woolsey, 3.
Bergman series, Cretaceous (?), Alaska, Schrader, 1, 3.
Bergman series, probably Mesozoic, Alaska, Mendenhall, 2.
Berkeleyan series, California, included in Pliocene, Lawson and Palache, 1.
Berkeleyan series, California, Lawson and Palache, 1.
Berkeleyan, California, Lawson (A. C.), 9.
Bertie formation (lower Waterlime), Silurian, New York, proposed for Rondout, Schuchert, 4
Bertie waterlime, Ontaric, New York, Clarke, 20.
Bertie water lime, Silurian, New York, Clarke and Luther, 1.
Bertie dolomite, Silurian, New York, Clarke and Luther, 3.
Bethany Falls limestone, Carboniferous, Missouri, Gallaher, 1.
Bethlehem granite, New Hampshire, Hitchcock (C. H.), 10.
Beulah shales, Jurassic, Black Hills, Darton, 1.
Bigby limestone, Ordovician, Tennessee, Hayes and Ulrich, 1.
Bigby beds, Ordovician, Kentucky, Miller (A. M.), 4.
Bighorn limestone, Ordovician, Wyoming, Darton, 18.

Geologic formations described—Continued.
Bighorn limestone, Ordovician, Wyoming, Darton, 16.
Big Injun series, Carboniferous, Ohio, Bownocker, 3.
Big Injun, Carboniferous, West Virginia, Stevenson (J. J.), 4.
Big Injun series, Carboniferous, Ohio, Bownocker, 5.
Bingen sands, Cretaceous, Arkansas, Veatch, 7.
Bingham quartzite, Carboniferous, Utah, Keith, 13.
Birch Creek series, Alaska, Collier, 2.
Birch Creek schists, pre-Devonian, Alaska, Prindle, 2.
Birdsville formation, Carboniferous (Mississippian), Illinois, Bain, 19.
Birdsville limestone, Mississippian, Mississippi Valley, Ulrich, 8.
Birmingham shale, Carboniferous, West Virginia, White (I. C.), 7.
Bisbee group, Cretaceous, Arizona, Ransome, 10, 11, 14.
Biwabik formation, included in Upper Huronian, Minnesota, Clements, 3.
Biwabik formation, included in Upper Huronian series, Algonkian, Minnesota, Leith, 4.
Black Hand formation, Carboniferous, Ohio, Prosser, 10.
Black River limestone, Ordovician, Canada, Ells, 7, 8.
Black River limestone, Ordovician, Vermont, Perkins, 7, 11.
Black River limestone, Ordovician, Missouri, Gallaher, 1.
Black River stage, Ordovician, Pennsylvania, Collie, 3.
Black River limestone, Ordovician, Canada, Ells, 20.
Black River limestone, Ordovician, New York, Cushing, 9, 10.
Blacktail Deer Creek beds, Tertiary, Douglass, 4.
Blaine division, Permian, Oklahoma, Gould, 9.
Blaine formation, Carboniferous (Permian), Oklahoma, Gould, 14.
Blanco beds, Pliocene, Tertiary, Texas, Gidley, 4.
Bliss sandstone, Cambrian, Texas, Richardson (G. B.), 4.
Blossburg formation, Devonian, Pennsylvania, Fuller, 3.
Blowing Rock gneiss, Archean, North Carolina, Keith, 4.
Blueberry Mountain argillites, Devonian, New Hampshire, Hitchcock (C. H.), 10.
Boggy shale, Carboniferous, Indian Territory, Taff, 2-4.
Boise granite, Archean, Idaho, Russell, 5.
Bokchito formation, Cretaceous, Indian Territory, Taff, 3, 6.

Geologic formations described—Continued.
- Bolinas sandstone, California, Lawson (A. C.), 9.
- Bolin Creek sandstone member of Elizabeth formation, Ordovician, Missouri, Ball and Smith, 1.
- Bolsa quartzite, Cambrian, Arizona, Ransome, 9, 11, 14.
- Bolton gneiss, Massachusetts, Perry and Emerson, 1.
- Bonita sandsone, California, Lawson (A. C.), 9.
- Bonneterre limestone, Cambrian, Missouri, Bain and Ulrich, 2.
- Boone formation, Carboniferous, Arkansas, Adams (G. I.), 3.
- Boone formation, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
- Boone formation, Carboniferous, Missouri, Bain, 13.
- Boone limestone, Carboniferous, Arkansas, Ulrich, 5.
- Boone limestone and chert, Carboniferous, Arkansas, Adams (G. I.), 15.
- Boone beds, Carboniferous (Mississippian), Kansas, Wooster, 1, 2.
- Boone formation, Carboniferous, Indian Territory, Taff, 17.
- Boone formation, Mississippian, Arkansas, Adams and Ulrich, 1.
- Boscabel bowlder beds, Triassic, Virginia, Woodworth, 4.
- Bossardville limestone, Silurian, New Jersey, Weller, 6.
- Bossardville shale, Silurian, New York, Hartnagel, 2.
- Boston group, Carboniferous, Arkansas, Adams (G. I.), 3.
- Bradford schist, Ordovician, Vermont, Richardson (C. H.), 2.
- Bradfordian, Carboniferous, Pennsylvania, Girty, 10.
- Bradshaw granite, Arizona, Jaggar and Palache, 1.
- Bragdon formation, pre-Cretaceous, California, Hershey, 2.
- Bragdon formation, Carboniferous, California, Diller, 12, 18.
- Bragdon formation, Jurassic, California, Hershey, 21.
- Brandon clays, Tertiary, Vermont, Woodworth, 8.
- Braxton formation, Carboniferous, West Virginia, Campbell (M. R.), 2.
- Brazil formation, Carboniferous, Indiana, Fuller and Ashley, 1.
- Brentwood (Pentremital) limestone, Carboniferous, Arkansas, Ulrich, 5.
- Brentwood limestone lentil, Carboniferous, Arkansas, Adams and Ulrich, 1.
- Bretonian division, Cambrian, Canada, Matthew (G. F.), 20.
- Brevard schist, Cambrian, North Carolina, Keith, 12.
- Briceville shale, Carboniferous, Tennessee, Keith, 1.

Geologic formations described—Continued.
- Bridgeton formation, Pleistocene, New Jersey, Kümmel and Knapp, 1.
- Bridgeton formation, Pleistocene, New Jersey, Salisbury, 1.
- Bridgeton formation, New Jersey, Smock, 1.
- Brier slate, Algonkian, Michigan, Bayley, 1.
- Brimfield schist, Massachusetts, Perry and Emerson, 1.
- Bronson beds, Carboniferous, Kansas, Wooster, 1, 2.
- Bronson formation, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
- Brownsport bed, Silurian, Tennessee, Foerste, 7.
- Brownstown beds, Cretaceous, Texas, Hill (R. T.), 3.
- Brownwood division (Canyon division), Carboniferous, Texas, Hill (R. T.), 3.
- Brule clay, Tertiary, South Dakota, Darton, 8.
- Brule formation, Tertiary, Wyoming, Nebraska, Adams (G. I.), 4.
- Brule clay, Oligocene, Tertiary, Nebraska, Barbour (E. H.), 8.
- Brule clay, Tertiary, Nebraska, Darton, 10.
- Brule formation (Oligocene) Tertiary, Wyoming, Smith (W. S. T.), 1.
- Brunswick series, included in Newark, New Jersey, Knapp (G. N.), 1.
- Buchanan gravels, Pleistocene, Iowa, Norton, 1.
- Buchanan gravel, Pleistocene, Iowa, Udden, 2.
- Buchanan gravels, Quaternary, Iowa, Calvin, 10.
- Buchanan gravels, Pleistocene, Iowa, Savage, 7, 8.
- Buchanan gravels, Pleistocene, Iowa, Macbride, 4.
- Buda formation, Cretaceous, Texas, Hill (R. T.), 3.
- Buda limestone, Cretaceous, Texas, Hill and Vaughan, 1.
- Buda limestone, Cretaceous, Texas, Shattuck, 8.
- Buda limestone (?), Cretaceous, Texas, Udden (Johan A.), 11.
- Buffalo sandstone, Carboniferous, West Virginia, White (I. C.), 7.
- Buena Vista member, Carboniferous, Ohio, Prosser and Cumings, 1.
- Buena Vista shale, Cambrian, Virginia, Campbell (H. D.), 1.
- Buffalo sandstone, Carboniferous, Maryland, Clark and Martin, 6.
- Burden conglomerate, Ordovician, New York, Grabau, 9.
- Burgen sandstone, Ordovician, Indian Territory, Taff, 17.
- Burgoon (Mountain) limestone, Carboniferous, Pennsylvania, Butts, 4.

Geologic formations described—Continued.
Burgoon sandstone, Carboniferous, Pennsylvania, Butts, 7.
Burgoon sandstone, Carboniferous, Pennsylvania, Woolsey, 3.
Burlingame limestone and shale, Carboniferous, Kansas, Prosser, 7.
Burlingame shales, Carboniferous, Kansas, Beede, 6.
Burlingame shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Burlingame limestone, Carboniferous, Smith (A. J.), 2.
Burlington limestone, Carboniferous, Missouri, Adams (G. I.), 3.
Burlington-Keokuk or Carthage limestone, Carboniferous, Missouri, Gallaher, 1.
Burlington limestone, Carboniferous, Missouri, Ball, 1.
Burlington (upper) limestone, Carboniferous, Missouri, Ball and Smith, 1.
Burlington limestone, Mississippian, Missouri, Van Horn, 1.
Burns latite complex, Colorado, Cross and Howe, 1.
Butler sandstone, Carboniferous, Pennsylvania, Butts, 6.
Butler sandstone, Carboniferous, Pennsylvania, Woolsey, 3.
Butler sandstone, Carboniferous, Pennsylvania, Butts, 4.
Butterfield limestone member, Carboniferous, Utah, Keith, 13.
Byram beds, Tertiary, Mississippi, Casey, 2.
Cacaquabic granite, Algonkian, Minnesota, Clements, 3.
Cache Creek series, pre-Cretaceous, Washington, Smith and Calkins, 1.
Caddo limestone, Cretaceous, Indian Territory, Taff, 3, 6.
Calciferous (Beekmantown) limestone, Ordovician, New York, Cushing, 2.
Calciferous formation, Ordovician, Canada, Ells (R. W.), 8, 20.
Calciferous, Ordovician, Missouri, Gallaher, 1.
Calciferous sand rock, Ordovician, Canada, Adams and Le Roy, 1.
Calderwood's Neck schists, Maine, Smith (G. O.), 2.
Calera limestone, California, Lawson (A. C.), 9.
Calhoun shales, Carboniferous, Kansas, Beede, 6.
Calhoun shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Caliche Mountain rhyolite, Mexico, Hill (R. T.), 15.
Callaway limestone, Devonian, Missouri, Gallaher, 1.
Calvan sandstone, Carboniferous, Indian Territory, Taff, 2.
Calvert formation, Miocene, Maryland, Clark (W. B.), 6.

Geologic formations described—Continued.
Calvert formation, Miocene, Maryland, Shattuck, 10.
Cambridge, Upper and Lower, limestone, Carboniferous, West Virginia, White (I. C.), 7.
Cambridge limestone, Carboniferous, Ohio, Orton and Peppel, 1.
Cambridge limestone, Carboniferous, Maryland, Clark and Martin, 6.
Camden series, Tertiary, Texas, Hill (R. T.), 9.
Camden chert, Devonian, Tennessee, Foerste, 7.
Camillus shale, Ontaric, New York, Clarke, 20.
Camillus shale, Silurian, New York, Clarke and Luther, 1, 3.
Campagrande formation, Cretaceous, Texas, Richardson (G. B.), 4.
Campan series, Pliocene, California, Lawson and Palache, 1.
Campan, California, Lawson (A. C.), 9.
Campbells Creek limestone, Carboniferous, West Virginia, White (I. C.), 7.
Camp Nelson beds, Ordovician, Kentucky, Miller (A. M.), 4.
Canaan shales, Carboniferous, West Virginia, Stevenson (J. J.), 4.
Canadian, Champlainic, New York, Clarke, 20.
Canandaigua shale, Devonic, New York, Clarke, 20.
Canandaigua shale, Devonian, New York, Clarke and Luther, 1.
Caney shale, Carboniferous, Indian Territory, Taff, 2, 3, 6, 13.
Cannelton (Stockton) limestone, Carboniferous, West Virginia, White (I. C.), 7.
Canyon division, Carboniferous, Texas, Taff, 4.
Cap Barré beds, Devonian, Canada, Clarke (J. M.), 26.
Cape May formation, New Jersey, Smock, 1.
Cape May formation, Pleistocene, New Jersey, Salisbury, 1.
Cape May formation, Pleistocene, New Jersey, Kümmel and Knapp, 1.
Capitan limestone, Permian, Texas, Richardson (G. B.), 4.
Capote limestone, Arizona, Blake (W. P.), 17.
Cardiff quartzite, Ordovician (?), Maryland, Mathews, 6.
Cardiff shale, Devonian, New York, Clarke and Luther, 1, 3.
Cariboo schists, lower Paleozoic, Canada, Atkin, 1.
Carlile formation, Cretaceous, Black Hills, Darton, 1.
Carlile formation, Cretaceous, South Dakota, Darton, 8.
Carlile formation, Cretaceous, Black Hills region and Colorado, Darton, 16.

Geologic formations described—Continued.

Carlile formation, Cretaceous, South Dakota, Darton and Smith, 1.
Carlile formation, Cretaceous, Wyoming, Darton, 14, 26.
Carlile shales, Cretaceous, South Dakota, Todd (J. E.), 13.
Carlile formation, Cretaceous, Black Hills region, Wyoming, and Colorado, Darton, 18.
Carlile formation, Cretaceous, Wyoming and South Dakota, Darton and O'Harra, 1.
Carmichael clay, Quaternary, Pennsylvania, Campbell (M. R.), 6, 8, 18.
Carmichaels formation, Quaternary, Pennsylvania, Butts, 4, 6.
Carmichaels formation, Quaternary, Pennsylvania, Stone (R. W.), 6–8.
Carmichaels formation, Quaternary, Pennsylvania, Woolsey, 3.
Carolina gneiss, Archean, Piedmont region, Darton and Keith, 1.
Carolina gneiss, Archean, North Carolina, Keith, 4, 9, 12.
Carters limestone, Ordovician, Tennessee, Hayes and Ulrich, 1.
Carthage limestone, Carboniferous, Missouri, Gallaher, 1.
Cascade formation, Cretaceous, Montana, Stanton, 4.
Cascade formation, Cretaceous, Montana, Pirsson, 4.
Cashaqua shales, Devonian, New York, Luther, 2.
Cashaqua shales, Devonian, New York, Clarke, 19, 20.
Cashaqua shale, Devonian, New York, Clarke and Luther, 1, 2.
Cason shale, Upper Silurian, Arkansas, Adams (G. I.), 3.
Cason shale, Silurian, Arkansas, Ulrich, 5.
Cassada Garden gravels, West Indies, Spencer (J. W.), 1.
Cassin formation, Ordovician, New York, Cushing, 10.
Cassville plant shale, Carboniferous, West Virginia, White (I. C.), 7.
Castile gypsum, Permian, Texas, Richardson (G. B.), 4.
Castle conglomerate, Colorado, Lee (W. T.), 2.
Catahoula (Grand Gulf), Tertiary, Louisiana, Veatch, 7.
Cathead limestone, Ordovician, Canada, Dowling, 1.
Catheys formation, Ordovician, Tennessee, Hayes and Ulrich, 1.
Catskill beds, Devonic, New York, Clarke, 20.
Catskill formation, Devonian, Pennsylvania, Campbell, 6.
Catskill formation, Devonian, Pennsylvania, Fuller, 3, 4.
Catskill formation, Devonian, Pennsylvania, Butts, 7.
Catskill sandstone, Devonian, Claypole, 5.
Cattaraugus beds, Carboniferous, New York, Clarke, 16, 20.
Cattaraugus beds, Devonian, New York, Glenn, 1.
Cattaraugus formation, Devonian, Pennsylvania, Fuller and Alden, 1, 2.
Cavanal (Cavaniol) group, Carboniferous, Indian Territory and Arkansas, Taff, 4.
Cayugan, Ontaric, New York, Clarke, 20.
Cedar Creek beds, Tertiary, Colorado, Matthew (W. D.), 2.
Cedartop gypsum, Permian, Oklahoma, Gould, 9.
Cedartop gypsum member, Carboniferous (Permian), Oklahoma, Gould, 14.
Cedar Valley stage, Devonian, Iowa, Calvin, 10.
Cedar Valley stage, Devonian, Iowa, Savage, 3.
Cedar Valley limestone, Devonian, Iowa, Eckel and Bain, 1.
Cedar Valley stage, Devonian, Iowa, Savage, 7, 8.
Cedarville limestone, Silurian, Ohio, Prosser, 10.
Cemetery limestone, Cambrian, Montana, Weed, 5.
Centerfield limestone, Devonic, New York, Clarke, 20.
Centerfield limestone, Devonian, New York, Clarke and Luther, 1.
Chadron formation, Tertiary, Wyoming, Adams (G. I.), 4.
Chadron sand, Tertiary, South Dakota, Darton, 8.
Chadron formation, Oligocene, Tertiary, Nebraska, Barbour (E. H.), 8.
Chadron formation, Tertiary, Nebraska, Darton, 10.
Chadron formation (Oligocene), Tertiary, Wyoming, Smith (W. S. T.), 1.
Chadron formation, Tertiary, South Dakota, Darton and Smith, 1.
Chagrin formation, Devonian, Ohio, Prosser, 10.
Champlainic, New York, Clarke, 20.
Chandler formation, Carboniferous, Oklahoma, Kirk, 1.
Chaney gypsum member, Carboniferous (Permian), Oklahoma, Gould, 14.
Chanute shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Chanute shale, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Chariton conglomerate, Pennsylvanian series, Beyer and Young, 1.
Charleston sandstone, Carboniferous, West Virginia, Campbell (M. R.), 2, 5, 10.
Chase stage, Carboniferous, Kansas, Prosser, 7.

Geologic formations described—Continued.
Chattahoochee group, Tertiary, Florida, Dall, 8.
Chattahoochee limestones and clays, Tertiary, Florida, Georgia, and Alabama, Maury, 1.
Chattanooga black shale, Devonian, Kentucky and Tennessee, Foerste, 1.
Chattanooga shale, Devonian, Tennessee, Keith, 1.
Chattanooga shale, Devonian, Tennessee, Hayes and Ulrich, 1.
Chattanooga black shale, Devonian, Tennessee, Foerste, 7.
Chattanooga shale, Devonian, Georgia, Hayes, 5.
Chattanooga formation, Devonian, Arkansas, Adams and Ulrich, 1.
Chattanooga formation, Devonian, Indian Territory, Taff, 17.
Chattanooga shale, Devonian, Tennessee, Keith, 11.
Chautauquan, Devonic, New York, Clarke, 20.
Chazy, Ordovician, Vermont, Perkins, 7.
Chazy formation, Ordovician, Canada, Ells (R. W.), 8, 20.
Chazy limestone, Ordovician, Canada, Ells, 7.
Chazy shales, Ordovician, Canada, Ells, 7.
Chazy, Ordovician, Vermont, Perkins, 11.
Chazy formation, Ordovician, New York, Cushing, 10.
Chazy limestone, Ordovician, Canada, Adams and Le Roy, 1.
Chazy limestone, Ordovician, New York, Vermont, and Canada, Raymond (P. E.), 7.
Chemung formation, Devonian, Pennsylvania, Fuller, 3.
Chemung beds, Devonic, New York, Clarke, 20.
Chemung formation, Devonian, Pennsylvania, Fuller and Alden, 1, 2.
Chemung shales, Devonian, New York, Glenn, 1.
Chemung period, Devonian, New York, Schneider, 1.
Chemung formation, Devonian, Pennsylvania, Campbell (M. R.), 18.
Chemung formation, Devonian, Pennsylvania, Butts, 7.
Chemung group, Devonian, New York, Clarke and Luther, 2.
Chengwatana series, Minnesota, Hall (C. W.), 3.
Cherokee shale, Carboniferous, Kansas, Iowa, Bain, 3.
Cherokee shales, Carboniferous, Missouri, Adams (G. I.), 3.
Cherokee shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Cherokee shale, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.

Geologic formations described—Continued.
Cherokee shales, Carboniferous, Kansas, Beede and Rogers, 1.
Cherokee beds, Carboniferous, Kansas, Wooster, 1, 2.
Cherry Creek formation, Algonkian?, Montana, Douglass, 10.
Cherryvale shale, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Cherryville shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Chesapeake formation, Tertiary, Atlantic coast region, Darton and Keith, 1.
Chesapeake formation, Tertiary, Virginia, North Carolina, Darton, 7.
Chesapeake group, Miocene, Maryland, Clark (W. B.), 6.
Chesapeake group, Miocene, Maryland, Shattuck, 10.
Chester group, Carboniferous, Kentucky, Ulrich and Smith, 1.
Chester group, Mississippian, Mississippi Valley, Ulrich, 8.
Chester Valley limestone, Cambro-Ordovician, Pennsylvania, Bascom, 2, 3.
Chickachoc chert lentil, Carboniferous, Indian Territory, Taff, 2, 3.
Chickamauga limestone, Silurian, Tennessee, Keith, 1.
Chickamauga limestone, Silurian, Alabama and Georgia, Hayes, 5.
Chickamauga limestone, Ordovician, Tennessee, Keith, 11.
Chickamauga limestone, Ordovician, Virginia, Watson (T. L.), 17.
Chickies quartzite, Cambrian, Pennsylvania, Bascom, 2.
Chickies quartzite, Pre-Cambrian, Pennsylvania, Bascom, 3.
Chico, California, Lawson (A. C.), 9.
Chico formation, Cretaceous, Oregon, Washburne, 1.
Chico beds, Cretaceous, Oregon, Knowlton, 14.
Chico sandstones, Cretaceous, California, Lawson and Palache, 1.
Chico division, Cretaceous, California, Anderson, 7.
Chinati series, Permian(?) and Carboniferous, Texas, Udden (Johan A.), 11.
Chipola beds, Tertiary, Florida, Dall, 8.
Chipola marl, Tertiary, Florida, Maury, 1.
Chisna formation, lower Carboniferous or Devonian, Alaska, Mendenhall, 8.
Chitistone limestone, Carboniferous, Alaska, Schrader and Spencer, 1.
Chitistone limestone, probably Permian, Alaska, Mendenhall and Schrader, 1.
Chocolate limestone, Carboniferous, Kansas, Beede, 6.
Choptank formation, Miocene, Maryland, Clark (W. B.), 6.

Geologic formations described—Continued.

Choptank formation, Miocene, Maryland, Shattuck, 10.
Chouteau formation, Carboniferous, Mississippi Valley region, Keyes, 28.
Chouteau limestones, Carboniferous, Missouri, Adams (G. I.), 3.
Chouteau beds, Carboniferous, Missouri, Gallaher, 1.
Chouteau limestone, Carboniferous, Missouri, Ball, 1.
Chouteau, Carboniferous, Missouri, Ball and Smith, 1.
Chouteau limestone, Mississippian, Missouri, Van Horn, 1.
Chuar series, Nevada, Spurr, 6.
Chugwater formation, Triassic (?) and Permian (?), Colorado and Wyoming, Darton, 16.
Chugwater formation, Triassic (?) or Permian, Wyoming, Darton, 16.
Chugwater formation, Triassic (?), Wyoming, Darton, 18.
Cibolo beds, Carboniferous, Texas, Udden (Johan A.), 11.
Cieneguita beds, Carboniferous, Texas, Udden (Johan A.), 11.
Cimarron formation, Permo-Carboniferous, Kansas, Darton, 18.
Cincinnati or Hudson group, Silurian, Illinois, Alden, 1.
Cincinnati group, Ordovician, Tennessee, Foerste, 6.
Cincinnati series, Ordovician, Ohio, Indiana, and Kentucky, Foerste, 8.
Cincinnati period, Ordovician, Ohio and Indiana, Nickles, 3.
Cincinnatian, Champlainic, New York, Clarke, 20.
Cincinnatian series, Ordovician, Indiana, Foerste, 11.
Cincinnatus flags, Devonic, New York, Clarke, 20.
Cintura formation, Cretaceous, Arizona, Ransome, 10, 11, 14.
Cisco division, Carboniferous, Texas, Taff, 5.
Claggett formation, Cretaceous, Montana, Hatcher and Stanton, 1.
Claiborne, Tertiary, Louisiana, Lerch, 2.
Claiborne (Lower), Tertiary, Louisiana, Veatch, 2, 3.
Claiborne (Lower) stage, Tertiary, Louisiana, Harris, 2.
Claiborne formation, Tertiary, Louisiana, Lerch, 1.
Claiborne (Lower), Tertiary, Georgia, Harris, 5.
Claiborne (Lower) stage, Eocene, Texas, Dumble, 13.
Clairbornian, Tertiary, Florida, Dall, 8.
Clarendon beds, Miocene, Tertiary, Texas, Gidley, 4.
Clarion sandstone, Carboniferous, West Virginia, White (I. C.), 7.

Geologic formations described—Continued.

Clarion sandstone, Carboniferous, Pennsylvania, Butts, 4, 6, 7.
Clark formation, Carboniferous, West Virginia, Campbell, 5.
Clarksburg limestone, Carboniferous, Maryland, Clark and Martin, 6.
Clarksburg limestone, Carboniferous, West Virginia, White (I. C.), 7.
Clarno formation, Tertiary, Oregon, included in Eocene, Merriam (J. C.), 1, 2.
Clarno formation, Oregon, Knowlton, 14.
Clear Creek formation, Pre-Cretaceous, California, Hershey, 2.
Clear Creek volcanic series, Trias, California, Hershey, 21.
Clear Fork formation, Carboniferous, Texas, Hill (R. T.), 3.
Cleveland shale, Devonian, Ohio, Claypole, 5.
Cleveland shale, Devonian, Ohio, Prosser, 10.
Cliffwood clays, Cretaceous, New Jersey, Knapp (G. N.), 2.
Cliffwood lignitic sands and clays, Cretaceous, New Jersey, Kümmel and Knapp, 1.
Cliffwood clays, Cretaceous, New Jersey, Weller, 10.
Clifton limestone, Silurian, Tennessee, Hayes and Ulrich, 1.
Clifton limestone, Tennessee, Foerste, 5.
Clifton limestone, equivalent to Niagaran, Silurian, Tennessee, Foerste, 7.
Clinch sandstone, Silurian, Tennessee, Keith, 1, 11.
Clinton beds, Silurian, Missouri, Gallaher, 1.
Clinton formation, Silurian, Ohio, Bownocker, 3–5.
Clinton, Silurian, New York, Grabau, 1.
Clinton formation, Silurian, Maryland, Prosser, 3.
Clinton limestone, Silurian, Kentucky and Tennessee, Foerste, 1.
Clinton group, Silurian, New York, Schneider, 1.
Clinton limestone, Silurian, Indiana, Newsom, 3.
Clinton limestone, Silurian, Ohio, Prosser, 10.
Clinton limestone, Silurian, Tennessee, Foerste, 7.
Clinton limestone, Silurian, Indiana, Foerste, 11.
Clinton formation, Silurian, Canada, Corkill, 2.
Cloverly formation, Cretaceous, Wyoming, Darton, 16.
Coalbrooke schist, pre-Cretaceous, Oregon, Diller, 11.
Coaledo formation, Eocene, Oregon, Diller, 4.
Coaledo formation, Tertiary, Oregon, Smith (G. O.), 6.

Geologic formations described—Continued.
- Coalinga beds, Tertiary, California, Anderson, 7.
- Coast clays, Pleistocene, Texas, Dumble, 13.
- Coal Measures, Carboniferous, Maryland. Includes Pottsville, Allegheny, Conemaugh, Monongahela, and Dunkard formations, Clark and Martin, 5.
- Coal Measures, Carboniferous, Ohio, Bownocker, 3.
- Coal Measures, Carboniferous, Missouri, Gallaher, 1.
- Coal Measures, Carboniferous, Ohio, Bownocker, 5.
- Coal Measure formation, Carboniferous, Missouri, Ball and Smith, 1.
- Coal Measures, Carboniferous, Indiana, Hopkins (T. C.), 11.
- Cobleskill, Silurian, New York, Van Ingen and Clark, 1.
- Cobleskill (Coralline limestone), Silurian, New York, Schuchert, 4.
- Cobleskill limestone, Ontaric, New York, Clarke, 20.
- Cobleskill limestone, Silurian, New York, Hartnagel, 1.
- Cobleskill shale and dolomite, Silurian, New York, Clarke and Luther, 1.
- Cobleskill dolomite, Silurian, New York, Clarke and Luther, 3.
- Cochran conglomerate, Cambrian, North Carolina and Tennessee, Keith, 9.
- Cochran conglomerate, Cambrian, North Carolina and Tennessee, Keith, 11.
- Cockeysville marble, Maryland, Mathews and Miller, 1.
- Cockeysville marble, Cambro-Ordovician, Maryland, Mathews, 6.
- Cockfield, Tertiary, Louisiana, Veatch, 7.
- Cocksfield, Eocene, Tertiary, Louisiana, Veatch, 3.
- Cocksfield beds, included in Eocene, Tertiary, Louisiana, Harris, 2.
- Cocksfield Ferry beds, Eocene, Tertiary, Louisiana, Veatch, 2.
- Coeymans limestone, Devonian, New Jersey, Weller, 6.
- Coeymans limestone, Devonian, New York, Grabau, 9.
- Coeymans limestone, Devonian, New York, Van Ingen and Clarke, 1.
- Coeymans limestone, Devonic, Maryland, Schuchert, 7.
- Coeymans limestone, Devonic, New York, Clarke, 20.
- Coeymans limestone, New York, Shimer, 5.
- Coffee sand, Tennessee, Foerste, 7.
- Coggan limestone, Devonian, Iowa, Norton, 1.
- Coggan beds, Devonian, Iowa, Savage, 7.
- Cohansey formation, Tertiary, New Jersey, Knapp (G. N.), 1.
- Cohansey formation, Tertiary, New Jersey, Kümmel and Knapp, 1.

Geologic formations described—Continued.
- Coldbrook terrane, Cambrian, Canada, Matthew (G. F.), 20.
- Coldwater shales, Carboniferous, Michigan, Russell, 6.
- Coleman division, Carboniferous, Texas, Hill (R. T.), 3.
- Collingsworth gypsum, Permian, Oklahoma, Gould, 9.
- Collingsworth gypsum member, Carboniferous (Permian), Oklahoma, Gould, 14.
- Colob sandstone, Jurassic, Utah, Huntington and Goldthwait, 1.
- Colob formation, Utah, Huntington and Goldthwait, 2.
- Colorado group, Cretaceous, South Dakota, Todd (J. E.), 9–11, 15.
- Colorado group, Cretaceous, South Dakota, Todd and Hall, 1, 3.
- Colorado formation, Cretaceous, Montana, Pirsson, 4.
- Colorado formation, Cretaceous, North Dakota, Leonard, 4.
- Columbia formation, Pleistocene, Atlantic coast region, Darton and Keith, 1.
- Columbia lava, Oregon, Merriam (J. C.), 1.
- Columbia, Pleistocene Quaternary, Virginia, North Carolina, Darton, 7.
- Columbia formation, Tertiary, Louisiana, Clendenin, 1.
- Columbia group, Quaternary, Maryland, Shattuck, 3, 5.
- Columbia River lava, Tertiary, Oregon, Knowlton, 14.
- Columbia sands, Pleistocene, Texas, Hayes and Kennedy, 1.
- Columbia formation, Pleistocene, Atlantic coast region, Clark (W. B.), 6.
- Columbus limestone, Devonian, Ohio, Prosser, 10.
- Columbus limestone, synonym for Delaware limestone, Devonian, Ohio, Prosser, 13.
- Columbus sand, Cretaceous, New Jersey, Kümmel and Knapp, 1.
- Columbus sand, Cretaceous, New Jersey, Prather, 4.
- Colville series, Tertiary, Alaska, Schrader, 1, 3.
- Comanche series, Cretaceous, Texas, Hill (R. T.), 3.
- Comanche series, Cretaceous, Texas, Hill and Vaughan, 1.
- Comanche series, Cretaceous, Colorado, Darton, 16.
- Comanche series, Cretaceous, Texas, Richardson (G. B.), 4.
- Comanche formation, Cretaceous, Colorado, Darton, 24.
- Comanche series, Colorado and Wyoming, Stanton, 8.
- Comanche series, Cretaceous, Colorado and Kansas, Darton, 18.
- Comanche series, Cretaceous, Oklahoma, Gould, 14.

Geologic formations described—Continued.
Comanche Peak beds, Cretaceous, Texas, Hill (R. T.), 3.
Comanche Peak limestone, Cretaceous, Texas, Hill and Vaughan, 1.
Commercial limestone member, Carboniferous, Utah, Keith, 13.
Como beds, exact synonym Atlantosaurus beds, Cretaceous, Wyoming, Williston, 2.
Como beds, Jurassic, Wyoming, Stanton, 4.
Conasauga shale, Cambrian, Tennessee, Keith, 1.
Conasauga formation, Cambrian, Alabama, Hayes (C. W.), 5.
Conasauga shale, Cambrian, Georgia, Watson (T. L.), 9.
Concreto shale, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Conemaugh formation, Carboniferous, Maryland, Prosser, 3, 4.
Conemaugh formation, Carboniferous, Maryland. Included in Coal Measures. Includes Lower Mahoning sandstone, Mahoning limestone, Mahoning coal, Upper Mahoning sandstone, Masontown coal, Lower Cambridge limestone, Buffalo sandstone, Upper Cambridge limestone, Lower red shales, Bakerstown coal, Saltsburg sandstone, Crinoidal coal, Ames or Crinoidal limestone, Elklick coal, Morgantown sandstone, Clarksburg limestone, Franklin or Little Clarksburg coal, Connellsville sandstone, Lower Pittsburg limestone, and Lower Pittsburg coal, Clark and Martin, 5.
Conemaugh formation, Carboniferous, Maryland, Martin (G. C.), 1.
Conemaugh formation, Carboniferous, Pennsylvania, White and Campbell, 1.
Conemaugh formation, Carboniferous, Pennsylvania, Campbell (M. R.), 6, 8, 18.
Conemaugh formation (Lower Barren Coal Measures), Carboniferous, Ohio, Prosser, 10.
Conemaugh series, Carboniferous, West Virginia, White (I. C.), 7.
Conemaugh formation, Carboniferous, Pennsylvania, Butts, 4, 6, 7.
Conemaugh formation, Carboniferous, Pennsylvania, Richardson (G. B.), 3.
Conemaugh formation, Carboniferous, Maryland, Clark and Martin, 6.
Conemaugh formation, Carboniferous, Maryland, Martin, 16.
Conemaugh formation, Carboniferous (Pennsylvanian), Pennsylvania, Woolsey, 3.
Conemaugh formation, Carboniferous, Pennsylvania, Stone (R. W.), 6 8.
Connellsville sandstone, Carboniferous, West Virginia, White (I. C.), 7.

Geologic formations described—Continued.
Connellsville sandstone, member of Conemaugh formation, Carboniferous, Pennsylvania, Campbell (M. R.), 8, 18.
Connellsville sandstone, Carboniferous, Pennsylvania, Richardson (G. B.), 3.
Connellsville sandstone, Carboniferous, Maryland, Clark and Martin, 6.
Connellsville sandstone, Carboniferous, Pennsylvania, Stone (R. W.), 7, 8.
Connoquenessing sandstone, Carboniferous, Pennsylvania, Butts, 4, 6.
Connoquenessing sandstone, Carboniferous, Maryland, Clark and Martin, 6.
Contention series, Arizona, Blake (W. P.), 8.
Contention shale, Arizona, Church, 1.
Contra Costa beds, Tertiary, California, Anderson, 7.
Conway granite, Azoic, New Hampshire, Perry, 1.
Cook Mountain beds, Eocene, Tertiary, Texas, Hayes and Kennedy, 1.
Coös series, Silurian, New Hampshire, Hitchcock (C. H.), 10.
Coralline limestone, Silurian, New York, Hartnagel, 1.
Corniferous, Devonian, Ontario, Parks, 4.
Corniferous group, Devonian, New York, Schneider, 1.
Corniferous limestone, Devonian, Ohio, Claypole, 5.
Corniferous limestone, Devonian, Missouri, Gallaher, 1.
Corniferous or Jeffersonville limestone, Devonian, Indiana, Newsom, 3.
Corniferous period, Devonian, New York, Schneider, 1.
Corniferous-Hamilton period, Devonian, Ohio, Claypole, 5.
Corniferous formation, Devonian, Canada, Corkill, 2.
Cornwall limestone, Silurian, New York, Eckel, 6.
Coronado quartzite, Cambrian, Arizona, Lindgren, 28, 29.
Corryville beds, Ordovician, Ohio and Indiana, Nickles, 3.
Corryville beds, Ordovician, Kentucky, Nickles, 6.
Corryville beds, Ordovician, Indiana, Foerste, 11.
Corsicana beds, Cretaceous, Texas, Hill (R. T.), 3.
Corwin series, Mesozoic, Alaska, Schrader, 1, 3.
Corwin group, Mesozoic, Alaska, Collier, 12.
Cottonwood limestone, Carboniferous, Kansas, Beede, 6.
Cottonwood limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Cottonwood limestone, Carboniferous, Nebraska, Barbour (E. H.), 8.

Geologic formations described—Continued.
Cottonwood formation, Carboniferous, Kansas, Smith (A. J.), 2, 3.
Cottonwood limestone, Carboniferous, Kansas, Prosser and Beede, 1.
Cottonwood limestone, Carboniferous, Kansas, Beede and Sellards, 1.
Couchiching rocks, Canada, Coleman, 12.
Council Grove stage, Carboniferous, Kansas, Prosser, 7.
Cow Creek beds, Cretaceous, Texas, Hill (R. T.), 3.
Cowiche gravels, Quaternary, Washington, Smith (G. O.), 7.
Cox formation, Cretaceous, Texas, Richardson (G. B.), 4.
Cranberry granite, Archean, North Carolina and Tennessee, Keith, 4, 9, 12.
Cranberry granite, Archean, North Carolina, Keith, 9.
Cranberry granite, Archean, North Carolina and Tennessee, Keith, 11.
Crooks complex, Arizona, Jaggar and Palache, 1.
Crosswicks clays included in Matawan formation, Cretaceous, New Jersey, Berry, 5.
Crow Ridge series, Mesozoic, Montana, Weed, 5.
Crystal City sandstone, Ordovician, Missouri, Ulrich, 5.
Cuba sandstone, Devonic, New York, Clarke, 20.
Cuba sandstone lentil, included in Chemung shales, Devonian, New York, Glenn, 1.
Cuchara formation, Eocene(?), Colorado, Hills, 1.
Cuesta diabase, California, Fairbanks, 7.
Cumberland sandstone, Ordovician, Kentucky, Foerste, 1, 3.
Curdsville bed, Ordovician, Kentucky, Miller (A. M.), 4.
Curry member of Vulcan formation, Algonkian, Michigan, Bayley, 1.
Curzen's limestone, Carboniferous, Missouri, Gallaher, 1.
Cussewago sandstone, member of Oil Lake group, Devonian, Pennsylvania, Stevenson (J. J.), 4.
Cutler formation, Carboniferous, Colorado, Cross and Howe, 1–3.
Cutler formation, Permian, Colorado, Cross and Howe, 4.
Cutler formation, Carboniferous (Permian ?), Colorado, Cross (W.), 7.
Cuyahoga formation, Carboniferous, Ohio, Prosser, 1, 10.
Cuyahoga shales, Carboniferous, Ohio, Stevenson (J. J.), 4.
Cuyahoga formation, Carboniferous, Ohio, Prosser and Cumings, 1.
Cypress sandstone, Carboniferous (Mississippian), Illinois, Bain, 19.
Cypress sandstone, Mississippian, Mississippi Valley, Ulrich, 8.
Dadina schists, pre-Silurian, Alaska, Mendenhall, 8.
Dakota formation, Cretaceous, Black Hills, Darton, 1.
Dakota formation, Cretaceous, Colorado, Lee (W. T.), 1.
Dakota sandstone, Kansas, Charles, 1.
Dakota sandstone, Cretaceous, Colorado, Cross and Spencer, 1.
Dakota, Cretaceous, Montana, Willis, 6.
Dakota formation, Cretaceous, North Dakota, Babcock, 2.
Dakota sandstone, Cretaceous, South Dakota, Darton, 8.
Dakota sandstones, Cretaceous, Colorado, Hatcher, 6.
Dakota formation, Cretaceous, Great Plains region, Stanton, 4.
Dakota, Cretaceous, Kansas, Jones (A. W.), 1.
Dakota formation, Cretaceous, Nebraska, Barbour (E. H.), 8.
Dakota formation, Cretaceous, Nebraska, Carmony, 1.
Dakota formation, Cretaceous, South Dakota, Todd (J. E.), 9–11, 15.
Dakota formation, Cretaceous, South Dakota, Todd and Hall, 1–3.
Dakota group, Cretaceous, New Mexico, Johnson (D. W.), 4.
Dakota sandstone, Cretaceous, Wyoming, Smith (W. S. T.), 1.
Dakota, Cretaceous, Nebraska, Burchard, 2.
Dakota sandstone, Cretaceous, Black Hills region, Jaggar, 5.
Dakota sandstone, Cretaceous, Black Hills region, Wyoming and Colorado, Darton, 16.
Dakota sandstone, Cretaceous, South Dakota, Darton and Smith, 1.
Dakota formation, Cretaceous, Colorado, Fenneman, 10.
Dakota formation, Cretaceous, Colorado, Patton, 4.
Dakota formation, Cretaceous, Colorado and Wyoming, Stanton, 8.
Dakota formation, Cretaceous, Montana, Pirsson, 4.
Dakota formation, Cretaceous, North Dakota, Leonard, 4.
Dakota sandstone, Cretaceous, Black Hills region, Wyoming and Colorado, Darton, 18.
Dakota sandstone, Cretaceous, Colorado, Cross (W.), 7.
Dakota sandstone, Cretaceous, Oklahoma, Gould, 14.
Dakota sandstone, Cretaceous, Wyoming, Darton, 26.
Dakota sandstone, Cretaceous, Wyoming and South Dakota, Darton and O'Harra, 1.

Geologic formations described—Continued.

Dakota stage, Cretaceous, Wyoming, Trumbull, 1.
Dannemara formation, Algonkian, New York, Cushing, 2.
Davenport (upper and lower), Devonian, Iowa, Norton, 1.
Day Creek dolomite, Permian, Oklahoma, Gould, 9, 14.
Dayton limestone, Silurian, Ohio, Prosser, 10.
Deadwood formation, Cambrian, Black Hills, Darton, 1.
Deadwood formation, Cambrian, Black Hills region, Jaggar, 5.
Deadwood formation, Cambrian, Black Hills region and Wyoming, Darton, 16, 18.
Deadwood formation, Cambrian, Wyoming, Darton and O'Harra, 1.
Deadwood formation, Cambrian, Wyoming and South Dakota, Darton, 26.
Decker Ferry limestone, Silurian, New Jersey, Kümmel and Weller, 2.
Decker Ferry formation, Silurian, New Jersey, Weller, 6.
Decker Ferry formation, Silurian, New York, Hartnagel, 2.
Deepkill shale, Champlainic, New York, Clarke, 20.
Deep River beds, Tertiary, Montana, Douglass, 1, 8.
Deer Creek limestone, Carboniferous, Kansas, Beede, 6.
Deer Creek limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Delaware Mountain formation, Permian, Texas, Richardson (G. B.), 4.
Delaware limestone, Devonian, Ohio, Prosser, 13.
Delaware stage, Silurian, Iowa, Savage, 8.
Delphi dolomite, Permian, Oklahoma, Gould, 9.
Del Rio clay, Cretaceous, Texas, Hill and Vaughan, 1.
Del Rio formation, Cretaceous, Texas, Hill (R. T.), 3.
Del Rio clay (?), Cretaceous, Texas, Udden (Johan A.), 11.
Denison beds, Cretaceous, Texas, Hill (R. T.), 3.
Dennis limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Dennis limestone, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Denton subgroup, Cretaceous, Texas, Hill (R. T.), 3.
Denver formation, Tertiary, Colorado, Darton, 16.
Denver formation, Teritary, Colorado, Darton, 18.
Des Moines, Pennsylvanian series, Iowa, Leonard, 3.
Des Moines division, Carboniferous, Kansas, Missouri, Bain, 3.

Geologic formations described—Continued.

Des Moines stage, Upper Carboniferous or Pennsylvanian series, Iowa, Savage, 3.
Des Moines stage, Pennsylvanian series, Iowa, Beyer and Young, 1.
Des Moines formation, Carboniferous, Iowa, Eckel and Bain, 1.
Des Moines stage, Pennsylvanian series, Carboniferous, Iowa, Wilder, 3.
Des Moines stage, Carboniferous, Iowa, Udden (Jon A.), 1.
Des Moines stage, Carboniferous, Iowa, Williams (I. A.), 1.
Dexter sands, Cretaceous, Texas, Hill (R. T.), 3.
Diamond Peak quartzite, Nevada, Spurr, 6.
Dillard series, Cretaceous, Oregon, Louderback, 6.
Ditney formation, Carboniferous, Indiana, Fuller and Ashley, 1.
Ditney formation, Carboniferous, Indiana, Fuller and Clapp, 2.
Dixon clay, Silurian, Tennessee, Foerste, 7.
Dog Creek shales, Permian, Oklahoma, Gould, 9.
Dolores formation, Juratrias, Colorado, Cross and Spencer, 1.
Dolores formation, Triassic (?), Colorado, Cross (W.), 7.
Dolores formation, Triassic, Colorado, Cross and Howe, 2.
Domijean sands, Tertiary, California, Anderson, 7.
Dorans Cove sandstone, Carboniferous, Alabama, Stevenson (J. J.), 4.
Doré conglomerate, Huronian, Canada, Coleman and Willmott, 1, 2.
Doré formation, Canada, Bell (J. M.), 3.
Double Mountain formation, Carboniferous, Texas, Hill (R. T.), 3.
Douglas formation, Carboniferous, Kansas, Rogers, 1.
Dover limestone, Carboniferous, Kansas, Beede, 6.
Doyle shales, Carboniferous, Kansas, Prosser, 7.
Doyle shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Doyle shale, Carboniferous, Kansas, Prosser and Beede, 1.
Dresbach formation, Cambrian, Upper, Wisconsin and Minnesota, Berkey, 1.
Dripping Spring quartzite, Cambrian (?), Arizona, Ransome, 13.
Drum limestone, Carboniferous, Indian Territory, Adams, Girty, and White, 1.
Drum shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Drum limestone, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Duck Creek formation, Cretaceous, Texas, Hill (R. T.), 3.

Geologic formations described—Continued.
Dudley shale, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Dudley shales, Carboniferous, Kansas, Beede and Rogers, 1.
Dudley shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Duluth gabbro, included in Keweenawan, Minnesota, Clements, 3.
Duluth gabbro, included in Keweenawan, Minnesota, Leith, 4.
Dundee limestone, Devonian, Michigan, Russell, 6.
Dundee limestone, included in Traverse group, Devonian, Michigan, Grabau, 5.
Dunkard formation, Permian (?), Maryland, Prosser, 3, 4.
Dunkard formation, Carboniferous, Pennsylvania, Campbell (M. R.), 6, 8, 18.
Dunkard formation, Carboniferous, Maryland, Martin (G. C.), 1.
Dunkard formation, Carboniferous, Pennsylvania, White and Campbell, 1.
Dunkard formation, Permian (?), Maryland. Includes Waynesburg sandstone, Waynesburg "A" coal, Washington coal, Upper Washington limestone, Jollytown coal, and Jollytown limestone, Clark and Martin, 5.
Dunkard formation (Upper Barren Coal Measures), Carboniferous, Ohio, Prosser, 10.
Dunkard series, Carboniferous, West Virginia, White (I. C.), 7.
Dunkard formation, Carboniferous, Pennsylvania, Stone (R. W.), 2, 6, 7.
Dunkard formation, Carboniferous, Maryland, Clark and Martin, 6.
Dunkard formation, Carboniferous, Maryland, Martin, 16.
Dunkirk shales, Devonian, New York, Clarke, 19, 20.
Durazno formation, Mexico, Hill (R. T.), 15.
Eagle formation, Cretaceous, Montana, Hatcher and Stanton, 1.
Eagle limestone, Carboniferous, West Virginia, White (I. C.), 7.
Eagle formation, Cretaceous, Montana, Pirsson, 4.
Eagle Ford formation, Cretaceous, Texas, Dumble, 12.
Eagle Ford formation, Cretaceous, Texas, Hill (R. T.), 3.
Eagle Ford formation, Cretaceous, Texas, Hill and Vaughan, 1.
Earlton limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Easton schist, pre-Tertiary, Washington, Smith (G. O.), 8, 13.
Ebensburg sandstone, Carboniferous, Pennsylvania, Butts, 7.
Eden, Ordovician, Ohio, Indiana, and Kentucky, Foerste, 12.

Geologic formations described—Continued.
Eden group, Ordovician, Kentucky, Nickles, 6.
Edmonton series, Cretaceous, Canada, Lambe, 8.
Edmund's Hill andesites, Gregory (H. E.), 1.
Edwards limestone, Cretaceous, Texas, Hill (R. T.), 3.
Edwards limestone, Cretaceous, Texas, Hill and Vaughan, 1.
Edwards limestone, Cretaceous, Texas, Udden (Johan A.), 11.
Elbert formation, Devonian, Colorado, Cross (W.), 5.
Elbert formation, Devonian, Colorado, Cross and Howe, 1, 3.
Eleanor slates, Huronian, Canada, Coleman and Willmott, 1, 2.
Elkhorn hornstone, Cambrian, Montana, Weed, 5.
Elk Lick limestone, Carboniferous, West Virginia, White (I. C.), 7.
Elk Lick limestone, Carboniferous, Pennsylvania, Clapp, 4.
Ellensburg formation, Miocene, Tertiary, Washington, Smith (G. O.), 7, 8, 13.
Ellensburg formation, Tertiary, Washington, Calkins, 3.
Elmdale formation, Carboniferous, Kansas, Beede, 6.
Elmdale formation, Carboniferous, Kansas, Prosser, 7.
Elmdale formation, Carboniferous, Kansas, Adams, Girty, and White, 1.
Elmdale formation, Carboniferous, Kansas, Prosser and Beede, 1.
Elmdale beds, Carboniferous, Kansas, Wooster, 1, 2.
El Paso formation, Ordovician, Texas, Richardson (G. B.), 4.
Elvins formation, Cambrian, Missouri, Bain and Ulrich, 2.
Ely greenstone, Archean, Minnesota, Clements, 3.
Embarrass granite, included in Keweenawan, Minnesota, Leith, 4.
Emerald limestone, Arizona, Church, 1.
Emerald series, Arizona, Blake (W. P.), 8.
Empire formation, Tertiary, Oregon, Diller, 4, 11.
Emporia limestone and shale, Carboniferous, Kansas, Prosser, 7.
Emporia limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Emporia system, Carboniferous, Kansas, Smith (A. J.), 2.
Emporia beds, Carboniferous, Kansas, Wooster, 1, 2.
Emporia limestone, Carboniferous, Kansas, Smith (A. J.), 4.
Englewood limestone, Carboniferous, Black Hills, Darton, 1, 16, 18, 26.

Geologic formations described—Continued.

Englewood limestone, Carboniferous (Mississippian), Black Hills region, Jaggar, 5.
Enid formation, Carboniferous (Permian), Oklahoma, Gould, 14.
Enochkin formation, Jurassic, Alaska, Stanton and Martin, 1.
Enochkin formation, Jurassic, Martin, 11.
Equus beds, Pleistocene, Texas, Dumble, 13.
Erian, Devonic, New York, Clarke, 20.
Erie shale, Devonian, Ohio, Stevenson (J. J.), 4.
Erie (Bronson) beds, Carboniferous, Kansas, Wooster, 1, 2.
Erwin quartzite, Cambrian, Tennessee, Keith, 4, 12.
Escabrosa limestone, Carboniferous, Arizona, Ransome, 10, 11, 14.
Escamela limestone, Cretaceous, Mexico, Hall (C. E.), 1.
Escondido series, Tertiary, California, Hershey, 10.
Eskridge shales, Carboniferous, Kansas, Beede, 6.
Eskridge shales, Carboniferous, Kansas, Prosser, 7.
Eskridge shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Eskridge shale, Carboniferous, Kansas, Prosser and Beede, 1.
Esmeralda formation, Nevada, Spurr, 6.
Esopus grit, Devonian, New Jersey, Weller, 6.
Esopus grit, Devonian, New York, Grabau, 9.
Esopus grit, Devonian, New York, Van Ingen and Clark, 1.
Esopus grit, Devonic, New York, Clarke, 20.
Esopus grit, New York, Shimer, 5.
Etchegoin beds, Tertiary, California, Anderson, 7.
Etcheminian terrane, Cambrian, Canada, Matthew (G. F.), 20.
Eureka shale, Carboniferous, Missouri, Weller, 1.
Eureka quartzite, Nevada, Spurr, 6.
Eureka shales, Mississippian, Missouri, Gould, 12.
Eureka beds, Carboniferous, Kansas, Wooster, 1, 2.
Eureka rhyolite, Colorado, Cross and Howe, 1.
Eutaw formation, Cretaceous, Alabama, Smith (E. A.), 2.
Fairhaven diatomaceous earth, Miocene, Maryland, Shattuck, 10.
Fairmount beds, Ordovician, Ohio and Indiana, Nickles, 3.
Fairmount beds, Ordovician, Kentucky, Nickles, 6.
Fayette sands, Eocene, Texas, Dumble, 13.
Fayette sands, Eocene, Tertiary, Texas, Hayes and Kennedy, 1.
Fayette sands, Tertiary, Texas, Hill (R. T.), 9.
Fayette breccia, Devonian, Iowa, Savage, 7.
Fayetteville shale, Carboniferous, Arkansas, Adams (G. I.), 3, 15.
Fayetteville shale, Carboniferous, Arkansas, Ulrich, 5.
Fayetteville formation, Carboniferous, Indian Territory, Taff, 17.
Fayetteville formation, Mississippian, Arkansas, Adams and Ulrich, 1.
Ferguson gypsum, Permian, Oklahoma, Gould, 9.
Ferguson gypsum member, Carboniferous (Permian), Oklahoma, Gould, 14.
Fernvale formation, Ordovician, Tennessee, Hayes and Ulrich, 1.
Fickett series, Carboniferous, Alaska, Schrader, 1, 3.
Finlay formation, Cretaceous, Texas, Richardson (G. B.), 4.
Fish Creek sandstone, Carboniferous, West Virginia, White (I. C.), 7.
Fish-House clays, Pleistocene, New Jersey, Kümmel and Knapp, 1.
Flat Creek beds, Tertiary, Canada, McConnell, 5.
Flattop schist, Algonkian(?), North Carolina, Keith, 4.
Fleming beds (Frio clays), Tertiary, Texas, Hill (R. T.), 9.
Flint Creek beds, Tertiary, Montana, Douglass, 8.
Florena shale, Carboniferous, Kansas, Prosser and Beede, 1.
Florena shales, Carboniferous, Kansas, Beede and Sellards, 1.
Florence flint, Carboniferous, Kansas, Prosser, 7.
Florence flint, Carboniferous, Kansas, Adams, Girty, and White, 1.
Florence flint, Carboniferous, Kansas, Prosser and Beede, 1.
Florence beds, Carboniferous, Kansas, Wooster, 1, 2.
Florence flint, Carboniferous, Kansas, Beede and Sellards, 1.
Floyd shale, Carboniferous, Georgia, McCallie, 9.
Floyd shale, Carboniferous, Alabama and Georgia, Hayes, 5.
Floyd shale, Carboniferous, Tennessee, Stevenson (J. J.), 4.
Forbes limestone, Carboniferous, Missouri, Gallaher, 1.
Forest City sandstone, Carboniferous, Missouri, Gallaher, 1.
Fordham gneiss, New York, Eckel, 6.
Fordham gneiss, pre-Cambrian, New York, Merrill and others, 1.
Fort Benton group, Cretaceous, New Mexico, Johnson (D. W.), 4.

Geologic formations described—Continued.
- Fort Benton stage, Cretaceous, Wyoming, Trumbull, 1.
- Fort Logan Beds, Tertiary, Montana, Douglass, 8.
- Fort Payne chert, Carboniferous, Alabama and Georgia, Hayes, 5.
- Fort Payne chert, Carboniferous, Tennessee, Stevenson (J. J.), 4.
- Fort Payne chert, Carboniferous, Georgia, McCallie, 9.
- Fort Pierre group, Cretaceous, New Mexico, Johnson (D. W.), 4.
- Fort Pierre stage, Cretaceous, Wyoming, Trumbull, 1.
- Fort Riley limestone, Carboniferous, Kansas, Prosser, 7.
- Fort Riley limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
- Fort Riley limestone, Carboniferous, Kansas, Prosser and Beede, 1.
- Fort Riley limestone, Carboniferous, Kansas, Beede and Sellards, 1.
- Fort Scott limestone, Carboniferous, Indian Territory, Adams, Girty, and White, 1.
- Fort Scott limestone, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
- Fort Scott limestone, Carboniferous, Kansas, Beede and Rogers, 1.
- Fort Union beds, Cretaceous, New Mexico, Reagan, 1.
- Fort Union beds, North Dakota, Wilder, 7.
- Fort Worth formation, Cretaceous, Texas, Hill (R. T.), 3.
- Fortymile series, Alaska, Collier, 2.
- Fortymile formation, pre-Devonian, Alaska, Prindle, 2.
- Fountain formation, Carboniferous (Pennsylvanian), Colorado, Darton, 16.
- Fountain sandstone, Triassic(?), Colorado, Fenneman, 10.
- Fowler limestone, Ordovician, Kentucky, included in Richmond group, Foerste, 1.
- Fox Hills formation, Cretaceous, Black Hills, Darton, 1.
- Fox Hills [formation], Cretaceous, New Mexico, Reagan, 1.
- Fox Hills formation, Cretaceous, Black Hills region and Wyoming, Darton, 16.
- Fox Hills formation, Cretaceous, Wyoming, Darton, 14.
- Fox Hills stage, Cretaceous, Wyoming, Trumbull, 1.
- Fox Hills, Cretaceous, North Dakota, Leonard, 4.
- Fox Hills formation, Cretaceous, Black Hills region, Wyoming and Colorado, Darton, 18.
- Fox Hills formation, Cretaceous, Colorado, Fenneman, 10.

Geologic formations described—Continued.
- Franciscan series, California, Lawson and Palache, 1.
- Franciscan, California, Lawson (A. C.), 9.
- Franciscan series, California, Osmont, 1.
- Franconia sandstone, Upper Cambrian, Wisconsin and Minnesota, Berkey, 1.
- Franks conglomerate, Carboniferous, Indian Territory, Taff, 6, 13.
- Fredericksburg division, Cretaceous, Texas, Hill (R. T.), 3.
- Fredericksburg limestone, Cretaceous, Texas, Dumble, 12.
- Fredericksburg group, Cretaceous, Texas, Richardson (G. B.), 4.
- Fredericktown limestone, Cambrian, Missouri, Adams (G. I.), 3.
- Fredericktown dolomite, Cambrian, Missouri, Keyes, 6.
- Fredonia limestone, Mississippian, Kentucky, Ulrich, 8.
- Fredonia member, Carboniferous (Mississippian), Illinois, Bain, 10.
- Freedom formation, pre-Cambrian, Wisconsin, Weidman, 5.
- Fremont limestone, Ordovician, Colorado, Darton, 16, 18.
- Freeport limestone, Carboniferous, Pennsylvania, Butts, 4, 6, 7.
- Freeport sandstone, Carboniferous, Pennsylvania, Butts, 4.
- Freeport (Lower) limestone, Carboniferous, Pennsylvania, Clapp, 4.
- Freeport (Upper) limestone, Carboniferous, Pennsylvania, Clapp, 4.
- Freeport sandstone, Carboniferous, Maryland, Clark and Martin, 6.
- Freeport sandstone, Carboniferous, Pennsylvania, Butts, 6.
- Freeport sandstone, Carboniferous, Pennsylvania, Woolsey, 3.
- Freeport (Lower), sandstone, Carboniferous, West Virginia, White (I. C.), 7.
- Freeport (Upper), limestone, Carboniferous, West Virginia, White (I. C.), 7.
- Friars' Hill series, West Indies, Spencer (J. W.), 1.
- Frio clays, Oligocene, Tertiary, Louisiana, Veatch, 2.
- Frio clays, Tertiary, Texas and Louisiana, Fishback, 1.
- Frio clays, Eocene, Texas, Dumble, 13.
- Frio clays, Eocene, Tertiary, Texas, Hayes and Kennedy, 1.
- Frio clays, Tertiary, Texas, Maury, 1.
- Frog Mountain limestone, Devonian, Alabama, Hayes, 5.
- Fulton layer, Ordovician, Ohio and Kentucky, Foerste, 12.
- Fuson formation, Cretaceous, Black Hills, Darton, 1, 8, 14, 16, 18.

Geologic formations described—Continued.

Fuson formation, Cretaceous, South Dakota, Darton and Smith, 1.

Fuson formation, Cretaceous, Wyoming, Darton, 26.

Fuson formation, Cretaceous, Wyoming and South Dakota, Darton and O'Harra, 1.

Gakona formation, Tertiary, Alaska, Mendenhall, 8.

Galena limestone, Ordovician, Illinois, Bain, 11.

Galena (Boone) beds, Carboniferous, Kansas, Wooster, 1.

Galena (Boone), beds, Carboniferous, (Mississippian), Kansas, Wooster, 2.

Galena-Trenton formation, Ordovician, Iowa, Calvin, 10.

Galena-Trenton, Iowa, Beyer and Williams, 2.

Galena-Trenton stage, Ordovician, Iowa, Savage, 8.

Galesburg shales, Carboniferous, Kansas, Adams, Girty, and White, 1.

Galesburg shale, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.

Galisteo sand group, Cretaceous, New Mexico, Johnson (D. W.), 4.

Gardeau flags, Devonic, New York, Clarke, 20.

Gardeau shales and flags, Devonian, New York, Luther, 2.

Gardiner clay, Quaternary, New York, Fuller, 29.

Garrard sandstone, Ordovician, Kentucky, Foerste, 12.

Garrard sandstone, Ordovician, Kentucky, Nickles, 6.

Garrison formation, Carboniferous, Kansas, Prosser, 7.

Garrison formation, Carboniferous, Kansas, Prosser and Beede, 1.

Garrison formation, Carboniferous, Kansas, Adams, Girty, and White, 1.

Garrison formation, Carboniferous, Kansas, Beede and Sellards, 1.

Gasconade limestone, Ordovician, Missouri, Adams (G. I.), 3.

Gasconade limestone, Cambro-Ordovician, Missouri, Ball, 1.

Gasconade limestone, Ordovician, Missouri, Ball and Smith, 1.

Gasconade limestone, Cambrian, Missouri, Bain and Ulrich, 2.

Gaspé sandstone, Devonian, Canada, Clarke (J. M.), 26.

Genesee black shale, Devonian, Missouri, Gallaway, 1.

Genesee shale, Devonic, New York, Clarke, 20.

Genesee shales, Ontario, Parks, 4.

Genesee shales, Devonian, New York, Luther, 2.

Genesee slate, Devonian, New York, Schneider, 1.

Genesee shale, Devonian, New York, Clarke and Luther, 1–3.

Geologic formations described—Continued.

Genesee shale, Devonian, Pennsylvania, Butts, 7.

Geneva limestone, Devonian, Indiana, Newsom, 3.

Geneva limestone, exact synonym (?) Shelby bed, Devonian, Indiana, Kindle, 1.

Genundewa limestone, Devonian, New York, Luther, 2.

Genundewa limestone, Devonian, New York, Clarke and Luther, 1, 2.

Georgetown formation, Cretaceous, Texas, Hill (R. T.), 3.

Georgetown limestone, Cretaceous, Texas, Hill and Vaughan, 1.

Georgia slates, Cambric, New York, Clarke, 20.

Gering formation, Miocene, Tertiary, Nebraska, Barbour (E. H.), 8.

Gering formation, Tertiary, Nebraska, Darton, 10, 18.

Gering sandstones, Tertiary, Nebraska, Peterson, 1.

Gerona marble, Cuba, Hayes, Vaughan, and Spencer, 1.

Giants Range granite, Algonkian, Minnesota, Clements, 3.

Gila conglomerate, Pleistocene (?), Arizona, Ransome, 6.

Gila conglomerate, Quaternary, Arizona, Ransome, 13.

Gila conglomerate, Quaternary, Arizona, Lindgren, 28, 29.

Gilboy sandstone, Carboniferous, West Virginia, White (I. C.), 7.

Gilmore sandstone, Carboniferous, West Virginia, White (I. C.), 7.

Glance conglomerate, Cretaceous, Arizona, Ransome, 9, 11, 14.

Glenkirk limestone, Silurian, Tennessee, Foerste, 7.

Glenn formation, Pennsylvania, Carboniferous, Indian Territory, Taff, 6.

Glen Rose beds, Cretaceous, Texas, Hill, (R. T.), 3.

Glen Rose formation, Cretaceous, Texas, Hill and Vaughan, 1.

Globe limestone, Devonian and Carboniferous, Arizona, Ransome, 6, 13.

Golden Bar andesite, Mexico, Hill (R. T.), 15.

Goldenville formation, Nova Scotia, Woodman, 1, 2.

Goodland limestone, Cretaceous, Indian Territory, Taff, 3, 6.

Goodland limestone, Cretaceous, Texas, Hill (R. T.), 3.

Goodnight (Paloduro) beds, Miocene, Tertiary, Texas, Gidley, 4.

Gower limestone, Silurian, Iowa, included in Niagara, Norton, 1.

Grainger shale, Devonian, Tennessee, Keith, 1, 11.

Grainger shale, Devonian, Virginia and Tennessee, Stevenson (J. J.), 4.

Grand Canyon group, Nevada, Spurr, 6.

Geologic formations described—Continued.
Grand Gulf, Oligocene, Tertiary, Louisiana, Veatch, 2, 3.
Grand Gulf formation, post-Tertiary, Gulf region, Smith and Aldrich, 1.
Grand Gulf formation, Tertiary, Dall, 6.
Grand Gulf group, Tertiary, Louisiana, Lerch, 2.
Grand Gulf stage, included in Oligocene, Tertiary, Louisiana, Harris, 2.
Grand Gulf formation, Smith and Aldrich, 2.
Grand Gulf formation, Tertiary, Gulf region, Dall, 9.
Grand Gulf formation, Tertiary, Gulf region, Hilgard, 4.
Grand Gulf sandstones, Tertiary, Alabama, Mississippi, and Louisiana, Maury, 1.
Grand Rapids group, Carboniferous, Michigan, Gregory (W. M.), 3.
Grande Grève limestones, Devonian, Canada, Clarke (J. M.), 26.
Graneros shale, Cretaceous, Black Hills, Darton, 1, 8.
Graneros formation, Cretaceous, Wyoming, Smith (W. S. T.), 1.
Graneros formation, Cretaceous, Wyoming, South Dakota, Darton, 14.
Graneros shale, Cretaceous, Black Hills region and Colorado, Darton, 16.
Graneros shale, Cretaceous, South Dakota, Darton and Smith, 1.
Graneros shales, Cretaceous, South Dakota, Todd (J. E.), 13.
Graneros shale, Cretaceous, Black Hills region, Wyoming, and Colorado, Darton, 18.
Graneros shale, Cretaceous, Wyoming, Darton, 26.
Graneros shale, Cretaceous, Wyoming and South Dakota, Darton and O'Harra, 1.
Granton diabase, Juratrias, New Jersey, Merrill and others, 1.
Gravina series, Mesozoic, Alaska, Brooks, 4.
Graydon sandstone, Carboniferous, Missouri, Adams (G. I.), 3.
Graydon sandstone, Carboniferous, Missouri, Ball, 1.
Graydon sandstone, Carboniferous, Missouri, Ball and Smith, 1.
Graydon sandstone, Missouri, Babcock and Minor, 1.
Graydon sandstone, Pennsylvanian, Missouri, Van Horn, 1.
Grayson formation, Cretaceous, Texas, Hill (R. T.), 3.
Great limestone, Carboniferous, West Virginia, White (I. C.), 7.
Great Smoky conglomerate, Cambrian, North Carolina and Tennessee, Keith, 9.

Geologic formations described—Continued.
Greenbrier limestone, Carboniferous, Maryland, Prosser, 3.
Greenbrier formation, Carboniferous, Maryland, Martin (G. C.), 1.
Greenbrier limestone, Carboniferous, Pennsylvania, Campbell (M. R.), 6, 8.
Greenbrier limestone, Virginia, Eckel, 20.
Greenbrier limestone, Carboniferous, Maryland, Virginia, and West Virginia, Stevenson (J. J.), 4.
Greenbrier limestone, Carboniferous, Pennsylvania, Clapp, 4.
Greene formation, Carboniferous, Pennsylvania, Stone (R. W.), 6.
Greenhorn limestone, Cretaceous, Black Hills, Darton, 1, 8.
Greenhorn limestone, Cretaceous, Black Hills region and Colorado, Darton, 16.
Greenhorn limestone, Cretaceous, Nebraska, Burchard, 2.
Greenhorn limestone, Cretaceous, South Dakota, Darton and Smith, 1.
Greenhorn limestone, Cretaceous, South Dakota, Todd (J. E.), 13.
Greenhorn limestone, Cretaceous, Wyoming, Darton, 14, 26.
Greenhorn limestone, Cretaceous, Black Hills region, Wyoming, and Colorado, Darton, 18.
Greenhorn limestone, Cretaceous, Wyoming and South Dakota, Darton and O'Harra, 1.
Green Pond conglomerate, Silurian, New Jersey, Kümmel and Weller, 2.
Green Pond conglomerate, Silurian, New York, Eckel, 6.
Green Pond conglomerate, Silurian, New Jersey, Weller, 6.
Greer formation, Carboniferous (Permian), Oklahoma, Gould, 14.
Greer division, Permian, Oklahoma, Gould, 9.
Grenville rocks, pre-Cambrian, New York, Cushing, 9, 10.
Grenville series, Canada, Coleman, 6.
Grenville series, pre-Cambrian, New York, Ogilvie, 6.
Grimes sandstones, included in Portage, Devonian, New York, Luther, 1.
Grimes sandstone, Devonian, New York, Clarke, 19, 20.
Grimes sandstone, Devonian, New York, Luther, 2.
Grimes sandstone, Devonian, New York, Clarke and Luther, 1, 2.
Grinnell argillite, Algonkian, Montana, Willis, 6.
Grizzly Peak andesite, Lawson and Palache, 1.
Gros Cap greenstones, Huronian, Canada, Coleman and Willmott, 1, 2.
Ground-ice formation, Quaternary, Alaska, Schrader, 3.

Geologic formations described—Continued.

Guadalupian, Carboniferous, Texas, Girty, 2. Exact synonym Permian.
Gubik sand, Quaternary, Alaska, Schrader, 3.
Guelph, Silurian, New York and Ontario, Clarke and Ruedemann, 1.
Guelph dolomite, Ontario, New York, Clarke, 20.
Guelph formation, Silurian, Canada, Corkill, 2.
Guernsey formation, Carboniferous, Wyoming, Smith (W. S. T.), 1.
Guernsey formation, Carboniferous (Mississippian), Wyoming, Darton, 16, 18.
Guertie sand, Neocene, Indian Territory, Taff, 2.
Gulf series, Cretaceous, Texas, Hill and Vaughan, 1.
Gunflint formation, included in Upper Huronian (Animikie), Minnesota, Clements, 3.
Gunter sandstone, Cambro-Ordovician, Missouri, Ball, 1.
Gunter sandstone, Ordovician, Missouri, Ball and Smith, 1.
Guyandot sandstone, Carboniferous, West Virginia, Campbell, 5.
Gwynedd shales, Pennsylvania, Lyman, 2.
Gypsum series, New Mexico, Reagan, 1.
Hailey shales, Cretaceous, Wyoming, Williston, 26.
Hale sandstone lentil, Carboniferous, Indian Territory, Taff, 17.
Hale sandstone member, Carboniferous, Arkansas, Adams and Ulrich, 1.
Halifax formation, Nova Scotia, Woodman, 1, 2.
Hallopus beds, Triassic, Colorado, Williston, 25.
Hamburg limestone and shale, Nevada, Spurr, 6.
Hamilton beds, Devonic, New York, Clarke, 20.
Hamilton formation, Devonian, New York, Cleland, 2.
Hamilton formation, Ontario, Parks, 4.
Hamilton group, Devonian, New York, Schneider, 1.
Hamilton (Callaway) limestone, Devonian, Missouri, Gallaher, 1.
Hamilton formation, Devonian, Canada, Corkill, 2.
Hamilton formation, Devonian, Pennsylvania, Butts, 7.
Hampshire formation, Devonian, Maryland, Prosser, 3.
Hampshire formation, Devonian, Maryland, Martin (G. C.), 1.
Hampshire for Catskill, Devonian, Appalachian region, Stevenson (J. J.), 4.
Hampton shale, Cambrian, North Carolina and Tennessee, Keith, 4.

Geologic formations described—Continued.

Hampton shale, Cambrian, North Carolina, Keith, 12.
Hanbury slate, Algonkian, Michigan, Bayley, 1.
Hannibal sandstone and shales, Carboniferous, Missouri, Adams (G. I.), 3.
Hannibal shales, Devonian, Missouri, Gallaher, 1.
Hannibal formation, Carboniferous, Missouri, Park and Lyman, 2.
Hardin sandstone, Devonian, Tennessee, Foerste, 7.
Harding sandstone, Ordovician, Colorado, Darton, 16, 18.
Hardiston quartzite, Cambrian, New Jersey, Kümmel and Weller, 1.
Hardiston quartzite, Cambrian, New Jersey, Weller, 3.
Hardyston quartzite, Cambrian, New Jersey, Kümmel and Weller, 2.
Hardyston quartzite, Cambrian, New Jersey, Weller, 6.
Harlan formation, White, 23.
Harper beds, Carboniferous, Kansas, Wooster, 1, 2.
Harrison diorite, post-Hudson, New York, Merrill and others, 1.
Harrison beds, Tertiary, Nebraska, Peterson, 1.
Harrison diorite, New York, Merrill and Magnus, 1.
Harrodsburg limestone, Carboniferous, Indiana, Newsom, 3.
Harrodsburg limestone, Lower Carboniferous, Indiana, Ashley, 2.
Harrodsburg limestones and shales, Carboniferous, Indiana, Hopkins (T. C.), 8.
Harrodsburg limestone, Mississippian, Indiana, Hopkins (T. C.), 11.
Hartford (Topeka) limestone, Carboniferous, Kansas, Beede, 6.
Hartford limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Hartselle sandstones, Carboniferous, Alabama, Stevenson (J. J.), 4.
Hartshorn sandstone, Carboniferous, Indian Territory, Taff, 2.
Hartshorne sandstone, Carboniferous, Indian Territory, Taff, 3, 4.
Hartville formation, Carboniferous, Wyoming, Smith (W. S. T.), 1.
Hartville formation, Carboniferous, Wyoming, Darton, 16, 18.
Harvey conglomerate, Carboniferous, West Virginia, Campbell, 5.
Hastings series, Canada, Coleman, 6.
Hastings series, Canada, Ells, 20.
Hatch flags and sands, Devonian, New York, Luther, 2.
Hatch shales and flags, Devonian, New York, Clarke, 19.
Hatch shale and flags, Devonian, New York, Clarke and Luther, 1, 2.
Hawkins formation, pre-Eocene, Washington, Smith (G. O.), 8.

Geologic formations described—Continued.
Hawkins formation, pre-Tertiary, Washington, Smith (G. O.), 13.
Haystack gypsum, Permian, Oklahoma, Gould, 9.
Haystack gypsum member, Carboniferous (Permian), Oklahoma, Gould, 14.
Hazlet sands, included in Matawan formation, Cretaceous, New Jersey, Berry, 5.
Helderberg limestone, Devonian, Maryland, Prosser, 3.
Helderbergian, Devonic, New York, Clarke, 20.
Helderbergian limestone, Devonian, New York, Clarke and Luther, 3.
Helderberg (Lower) formation, Silurian, Canada, Corkill, 2.
Helen formation, Canada, Bell (J. M.), 3.
Helen iron formation, Huronian, Canada, Coleman and Willmott, 1.
Henderson granite, Archean, North Carolina, Keith, 12.
Hensell sands, Cretaceous, Texas, Hill (R. T.), 3.
Hermitage formation, Ordovician, Tennessee, Hayes and Ulrich, 1.
Hermitage beds, Ordovician, Kentucky, Miller (A. M.), 4.
Hermosa formation, Carboniferous, Colorado, Cross and Howe, 1, 3.
Hermosa formation, Carboniferous (Pennsylvanian), Colorado, Cross (W.), 7.
Herod gravels, Quaternary, New York, Fuller, 29.
Hermansville limestone, Ordovician, Michigan, Bayley, 1.
Herschel quartzite, Arizona, Church, 1.
Hertha limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Hertha limestone, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Hesse quartzite, Cambrian, North Carolina and Tennessee, Keith, 9.
Hesse quartzite, Cambrian, Tennessee, Keith, 11.
Highland Boy limestone member, Carboniferous, Utah, Keith, 13.
Highpoint sandstone, Devonic, New York, Clarke, 20.
Highpoint sandstone, Devonian, New York, Clarke and Luther, 1, 2.
Hilliard formation, Cretaceous, Wyoming, Knight (W. C.), 7.
Hillsboro sandstone, Silurian, Ohio, Prosser, 10.
Hinton formation, Carboniferous, West Virginia, Campbell, 5.
Hinton formation, Carboniferous, West Virginia, Stevenson (J. J.), 4.
Hiwassee slate, Cambrian, North Carolina and Tennessee, Keith, 9, 11.
Hobo-Gulch lime-shale, Cambrian, Montana, Weed, 5.

Geologic formations described—Continued.
Hodges Hill sandstone, West Indies, Spencer (J. W.), 1.
Holdenville shale, Carboniferous, Indian Territory, Taff, 2.
Holston marble, Silurian, Tennessee, Keith, 1.
Holston marble member of Chickamauga limestone, Ordovician, Tennessee, Keith, 11.
Homewood sandstone, Carboniferous, Pennsylvania, Butts, 4, 6.
Homewood sandstone, Carboniferous, Maryland, Clark and Martin, 6.
Honaker limestone, Cambrian, Tennessee, Keith, 9, 11.
Horsetail Creek beds, Tertiary, Colorado, Matthew (W. D.), 2.
Horton series, Canada, Fletcher, 2.
Horton slates, Devonian or Carboniferous, Canada, Haycock, 1.
Hosselkuss limestone, Triassic, California, Diller, 12.
Howard limestone, Carboniferous, Kansas, Beede, 6.
Howard limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Hudson River beds, Ordovician, New York, Ruedemann, 1.
Hudson River formation, Ordovician, New Jersey, Weller, 3.
Hudson formation, Ordovician, New York, Eckel, 6.
Hudson River group, Ordovician, New York, Clarke (J. M.), 11.
Hudson River shale?, Ordovician, New Jersey, Kümmel and Weller, 2.
Hudson schist, Silurian, New York, Merrill and others, 1.
Hudson River beds, Ordovician, Missouri, Gallaher, 1.
Hudson River (or Cincinnati) group, Ordovician, Indiana, Newsom, 3.
Hudson River shales, Ordovician, New York, Grabau, 9.
Hudson River slates, Ordovician, New Jersey, Weller, 6.
Hudson shale and Hudson schist, Ordovician, New York, Dale, 5.
Hudson River formation, Cambro-Silurian, Canada, Corkill, 2.
Hudson River or Lorraine shale, Ordovician, Canada, Adams and Le Roy, 1.
Hudson schist, Ordovician, New York, Merrill and Magnus, 1.
Hueco formation, Carboniferous, Texas, Richardson (G. B.), 4.
Huerfano formation, Eocene, Colorado, Hills, 1.
Humboldt series, Nevada, Spurr, 6.
Huntingdon, Carboniferous, Pennsylvania, Stevenson (J. J.), 4.
Huntington series, Triassic(?), Oregon, Lindgren, 4.
Huntington limestone, Silurian, Indiana, Kindle, 6.

Geologic formations described—Continued.
Hunton limestone, Indian Territory, Taff, 3.
Hunton limestone, Siluro-Devonian, Indian Territory, Taff, 6, 13.
Huron group, Mississippian, Indiana, Hopkins (T. C.), 11.
Huron group, Lower Carboniferous, Indiana, Ashley, 2.
Huron limestone and sandstone, Carboniferous, Indiana, Hopkins (T. C.), 8.
Huron shale, Devonian, Ohio, Prosser, 10.
Huronian, Ontario, Bolton, 1.
Huronian, Canada, Coleman, 6.
Huronian, Willmott, 2.
Huronian (Lower), Minnesota, Clements, 3.
Huronian, Ontario, Graton, 2.
Huronian (Upper) (Animikie), Minnesota, Clements, 3.
Huronian series (Lower), Algonkian, Minnesota, Leith, 4.
Huronian series (Upper), Algonkian, Minnesota, Leith, 4.
Huronian, Canada, Barlow, 8.
Idaho formation, Tertiary, Idaho, Russell, 5.
Idaho formation, Tertiary, Idaho, Lindgren and Drake, 2.
Idalia shale, Tertiary, Missouri, Marbut, 1.
Ignacio quartzite, Cambrian, Colorado, Cross (W.), 5, 7.
Ignacio quartzite, Cambrian, Colorado, Cross and Howe, 1, 3.
Illinoian, Pleistocene, Iowa, Udden, 2.
Illinois drift, Quaternary, New Jersey, Salisbury and others, 1.
Illinoisan drift, Quaternary, Leverett, 4.
Illinoian drift, Quaternary, Ohio, Prosser, 10.
Illinoian, Pleistocene, Iowa, Beyer and Williams, 2.
Illinoian drift, Quaternary, Indiana and Illinois, Fuller and Clapp, 2.
Illinoian stage, Pleistocene, Iowa, Udden (Jon A.), 1.
Incarnacion clays, Carboniferous, New Mexico, Herrick (C. L.), 3.
Independence, Devonian, Iowa, Norton, 1.
Independence shales, Devonian, Iowa, Beyer and Williams, 2.
Inglefield formation, Carboniferous, Indiana, Fuller and Clapp, 2.
Iola limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Iola limestone, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Iola beds, Carboniferous, Kansas, Wooster, 1, 2.
Iowan drift, Pleistocene, Iowa, Norton, 1.

Geologic formations described—Continued.
Iowan, Quaternary, New Jersey, Salisbury and others, 1.
Iowan drift, Quaternary, Iowa, Savage, 3.
Iowan drift (?), Quaternary, Ohio, Prosser, 10.
Iowan loess, Quaternary, Iowa, Calvin, 10.
Iowan till, Quaternary, Iowa, Calvin, 10.
Iowan, Pleistocene, Iowa, Beyer and Williams, 2.
Iowan deposits, Quaternary, Indiana and Illinois, Fuller and Clapp, 2.
Iowan stage, Pleistocene, Iowa, Savage, 7, 8.
Iowan stage, Pleistocene, Iowa, Udden (Jon A.), 1.
Iowan stage, Pleistocene, Iowa, Williams (I. A.), 1.
Irondale limestone, Carboniferous, West Virginia, White (I. C.), 7.
Iron Mountain conglomerate, Cambrian, Missouri, Keyes, 6.
Iron Mountain porphyry, pre-Cambrian, Missouri, Adams (G. I.), 3.
Irving formation, Colorado, Howe, 3.
Irving greenstone, Colorado, Cross and Howe, 3.
Ithaca group, Devonian, New York, Clarke (J. M.), 11.
Ithaca beds, Devonic, New York, Clarke, 20.
Ithaca flags and sandstone, Devonian, New York, Clarke and Luther, 3.
Izard limestone, Ordovician, Missouri, Adams (G. I.), 3.
Izard limestone, Ordovician, Arkansas, Adams (G. I.), 15.
Izard limestone, Ordovician, Arkansas, Ulrich, 5.
Jackfork sandstone, Silurian, Indian Territory, Taff, 3.
Jackson, Tertiary, Louisiana, Veatch, 2, 3.
Jackson stage, included in Eocene, Tertiary, Louisiana, Harris, 2.
Jaskson stage, Tertiary, Louisiana, Casey, 1.
Jackson stage, Tertiary, Louisiana, Casey, 2.
Jackson limestone, Tertiary, Alabama, Maury, 1.
Jacksonboro white limestone, Tertiary, Florida, Dall, 8.
Jacob sands, Quaternary, New York, Fuller, 28.
Jameco gravels, Quaternary, New York, Veatch, 4.
Jameco gravel, Quaternary, New York, Fuller, 29.
Jefferson City formation, Cambro-Ordovician, Missouri, Ball, 1.
Jefferson City formation, Ordovician, Missouri, Ball and Smith, 1.

Geologic formations described—Continued.
Jefferson City formation, Cambro-Ordovician, Missouri, Van Horn, 1.
Jefferson City limestone, Ordovician, Missouri, Bain and Ulrich, 2.
Jeffersonville limestone, Devonian, Indiana, Hopkins (T. C.), 11.
Jeffersonville limestone, Devonian, Indiana, Newsom, 3.
Jeffersonville limestone, Devonian, Indiana, Kindle, 1.
Jeffersonville limestone, Devonian, Indiana, Siebenthal, 2.
Jemez marls, Pliocene, Tertiary, New Mexico, Reagan, 1.
Jennings formation, Devonian, Maryland, Prosser, 3.
Jennings formation, Devonian, Maryland, Martin (G. C.), 1.
Jennings for Chemung, Devonian, Appalachian region, Stevenson (J. J.), 4.
Joachim limestone, Cambro-Ordovician, Missouri, Van Horn, 1.
Joachim limestone, Ordovician, Missouri, Bain and Ulrich, 2.
Johannian division, Cambrian, Canada, Matthew (G. F.), 20.
John Day series, Tertiary, Oregon, Merriam (J. C.), 1, 2.
John Day series, Tertiary, Oregon, Knowlton, 13.
John Day formation, Russell, 21.
John Day series, Tertiary, Oregon, McClung, 1.
Johnstown limestone, Carboniferous, Pennsylvania, Clapp, 4.
Jollytown limestone, Carboniferous, Maryland, Clark and Martin, 6.
Jollytown limestone, Carboniferous, Pennsylvania, Stone (R. W.), 6.
Jordan limestone member, Carboniferous, Utah, Keith, 13.
Judith River beds, Cretaceous, Hatcher, 13.
Judith River beds, Cretaceous, Stanton, 3.
Judith River beds, Cretaceous, Montana, Hatcher, 17, 20.
Judith River beds, Cretaceous, Montana, Hatcher and Stanton, 1.
Judith River beds, Cretaceous, Montana, Osborn, 21.
Judith River beds, Montana, Sternberg, 4.
Juniata formation, Silurian, Maryland, Prosser, 3.
Kanab, Upper and Lower, Triassic, Utah, Huntington and Goldthwait, 1.
Kanab, Utah, Huntington and Goldthwait, 2.
Kanawha formation, Carboniferous, West Virginia, Campbell (M. R.), 2.
Kanawha black flint, Carboniferous, West Virginia, White (I. C.), 4.
Kanawha formation, Carboniferous, West Virginia, Campbell (M. R.), 5.
Kanawha black flint, Carboniferous, West Virginia, White (I. C.), 7.
Kanawha series, Carboniferous, West Virginia, White (I. C.), 7.
Kansan, Pleistocene, Iowa, Macbride, 1.
Kansan, Pleistocene, Iowa, Udden, 2.
Kansan drift, Pleistocene, Iowa, Calvin, 1.
Kansan drift, Pleistocene, Iowa, Miller (B. L.), 1.
Kansan drift, Pleistocene, Iowa, Norton, 1.
Kansan, Quaternary, New Jersey, Salisbury and others, 1.
Kansan or pre-Kansan drift, Quaternary, Leverett, 4.
Kansan drift, Quaternary, Iowa, Macbride, 3.
Kansan drift, Quaternary, Iowa, Savage, 3.
Kansan till, Quaternary, Iowa, Calvin, 10.
Kansan, Pleistocene, Iowa, Beyer and Williams, 2.
Kansan gravel, Quaternary, Pennsylvania, Leverett, 10.
Kansan stage, Pleistocene, Iowa, Macbride, 4.
Kansan stage, Pleistocene, Iowa, Savage, 7, 8.
Kansan stage, Pleistocene, Iowa, Udden (Jon A.), 1.
Kansan stage, Pleistocene, Iowa, Williams (I. A.), 1.
Kansas City limestone, Carboniferous, Missouri, Gallaher, 1.
Kanuti series, probably Paleozoic, Alaska, Mendenhall, 2.
Kanwaka shales, Carboniferous, Kansas, Beede, 6.
Kanwaka shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Karquinez, California, Lawson (A. C.), 9.
Kaskaskia group, Carboniferous, Indiana, Newsom, 3.
Kaskaskia limestone, Carboniferous, Missouri, Gallaher, 1.
Katalla formation, Tertiary, Alaska, Martin, 11.
Keene limestone, Devonian, Montana, Weed, 5.
Keewatin, Algonkian, Minnesota, Hall (C. W.), 4.
Kemp clay, Cretaceous, Texas, Hill (R. T.), 3.
Kenai series, probably Tertiary, Alaska, Mendenhall, 2.
Kenai series, Tertiary, Alaska, Schrader and Spencer, 1.
Kenai series, Eocene, Tertiary, Alaska, Collier, 2.
Kenai formation, Alaska, Stone (R. W.), 5.
Kenai formation, Tertiary, Alaska, Prindle, 2.

Geologic formations described—Continued.

Kenai series(?), Tertiary, Canada, McConnell, 5.
Kennicott formation, Jura-Cretaceous, Alaska, Mendenhall and Schrader, 1.
Kennicott formation, Upper Jurassic or Lower Cretaceous, Alaska, Schrader and Spencer, 1.
Kennicott formation, Cretaceous or Jurassic, Alaska, Mendenhall, 8.
Keokuk limestone, Mississippian series, Carboniferous, Iowa, Savage, 2.
Kern River beds, Tertiary, California, Anderson, 7.
Kessler limestone lentil, Carboniferous, Arkansas, Adams and Ulrich, 1.
Kessler limestone, Carboniferous, Arkansas, Ulrich, 5.
Ketchikan series, Upper Paleozoic, Alaska, Brooks, 4.
Keweenawan, Algonkian, Minnesota, Hall (C. W.), 3.
Keweenawan trap, pre-Cambrian, Wisconsin, Grant (U. S.), 2.
Keweenawan, Minnesota, Clements, 3.
Keweenawan, Minnesota, Leith, 4.
Keweenawan, Canada, Burwash, 1.
Keweenawan formation, Canada, Smith (W. N.), 1.
Key sandstone, Ordovician, Arkansas, Adams (G. I.), 15.
Key sandstone, Ordovician, Arkansas, Ulrich, 5.
Kiamichi formation, Cretaceous, Indian Territory, Taff, 3, 6.
Kiamitia clays, Cretaceous, Texas, Hill (R. T.), 3.
Kiger beds, Carboniferous, Kansas, Wooster, 1, 2.
Kigluaik series, Alaska, Brooks and others, 1.
Kigluaik series, older than Silurian, Alaska, Collier, 1.
Kilbuck conglomerate, Carbonic, New York, Clarke, 20.
Kilbuck conglomerate lentil, included in Cattaraugus beds, Devonian, New York, Glenn, 1.
Kinderhook, Carboniferous, Missouri, Weller, 1.
Kinderhook formation, Carboniferous, Iowa, Sardeson, 11.
Kinderhook formation, Carboniferous, Iowa, Eckel and Bain, 1.
Kinderhook formation, Carboniferous, Mississippi Valley regions, Keyes, 28.
Kinderhook stage, Lower Carboniferous or Mississippian series, Iowa, Savage, 3.
Kinderhook stage, Carboniferous, Iowa, Savage, 7.
King limestone, Carboniferous, Missouri, Adams (G. I.), 3.
Kingston beds, Devonian, New Jersey, Weller, 6.
Kirkwood formation, Miocene, New Jersey, Clapp, 3.
Kiser gypsum, Permian, Oklahoma, Gould, 9.
Kiser gypsum member, Carboniferous (Permian), Oklahoma, Gould, 14.
Kittanning limestone, Carboniferous, Ohio, Orton and Peppel, 1.
Kittanning sandstone, Carboniferous, Pennsylvania, Butts, 4.
Kittanning sandstone, Carboniferous, Maryland, Clark and Martin, 6.
Kittanning sandstone, Carboniferous, Pennsylvania, Butts, 6.
Kittanning sandstone, Carboniferous, Pennsylvania, Woolsey, 3.
Kittatinny limestone, Cambro-Ordovician, New Jersey, Kümmel and Weller, 1.
Kittatinny limestone, Cambrian, New Jersey, Weller, 3.
Kittatinny limestone, Cambrian, New Jersey, Kümmel and Weller, 2.
Kittatinny limestone, Cambrian and Ordovician, New Jersey, Weller, 6.
Kiutla argillite, Algonkian, Montana, Willis, 6.
Klondike series, Canada, McConnell, 5.
Klutina series, pre-Silurian(?), Alaska, Schrader and Spencer, 1.
Knapp beds, Carbonic, New York, Clarke, 20.
Knapp beds, Carboniferous, New York, Glenn, 1.
Knife Lake slates, Algonkian, Minnesota, Clements, 3.
Knob Lick granite, pre-Cambrian, Missouri, Adams (G. I.), 3.
Knobstone, Carboniferous, Indiana, Siebenthal, 2.
Knobstone, Carboniferous, Kentucky, Stevenson (J. J.), 4.
Knobstone, Lower Carboniferous, Indiana, Ashley, 2.
Knobstone group, Carboniferous, Indiana, Newsom, 3.
Knobstone (Upper) shale, included in Knobstone group, Carboniferous, Indiana, Newsom, 3.
Knobstone shales and sandstones, Carboniferous, Indiana, Hopkins, 8.
Knobstone sandstone, Carboniferous, Indiana, included in Knobstone group, Newsom, 3.
Knobstone group, Mississippian, Indiana, Hopkins (T. C.), 11.
Knox dolomite, Ordovician, Georgia, Watson (T. L.), 9.
Knox dolomite, Silurian, Alabama and Georgia, Hayes (C. W.), 5.
Knox dolomite, Ordovician, Tennessee, Keith, 1, 9, 11.
Knoxville, California, Lawson (A. C.), 9.
Knoxville formation, Cretaceous, Oregon, Washburne, 1.
Knoxville beds, Cretaceous, Oregon, Knowlton, 14.

Geologic formations described—Continued.

Knoxville shales, Cretaceous, California, Lawson and Palache, 1.
Knoxville division, Cretaceous, California, Anderson, 7.
Knoydart formation, Devonian, Canada, Ami, 4, 8, 10.
Koipato formation, Nevada, Spurr, 6.
Kokomo (Waterlime) limestone, Silurian, Indiana, Foerste, 11.
Kootenay series, Cretaceous, Alberta, Canada, Dowling, 10.
Kowak clay, Quaternary, Alaska, Schrader, 3.
Koyukuk, Cretaceous, Alaska, Schrader, 3.
Koyukuk series, Cretaceous, Alaska, Schrader, 1.
Kreyenhagen shales, Tertiary, California, Anderson, 7.
Kugruk group, Silurian or Devonian, Alaska, Collier, 1.
Kushtaka formation, Alaska, Martin, 15.
Kushtaka formation, Tertiary, Alaska, Martin, 11.
Kuzitrin series, Alaska, Brooks and others, 1.
Kuzitrin series, older than Silurian, Alaska, Collier, 1.
Labette shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Labette shale, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Labette shales, Carboniferous, Kansas, Beede and Rogers, 1.
Labette beds, Carboniferous, Kansas, Wooster, 1, 2.
Labrador formation, Pleistocene, Canada, exact synonym, Bowlder Clay, Ami, 1.
La Brisca formation, Hill (R. T.), 15.
Lafayette formation, Tertiary, Atlantic coast region, Darton and Keith, 1.
Lafayette, Louisiana, Veatch, 2.
Lafayette formation, Neocene, Maryland, Shattuck, 6.
Lafayette (?) formation, Neocene (?), Tertiary, Georgia and Alabama, Hayes, 5.
Lafayette formation, Tertiary, Quaternary(?), Louisiana, Clendenin, 1.
Lafayette sands, Neocene, Texas, Hayes and Kennedy, 1.
Lafayette formation, Pliocene, Atlantic coast region, Clark (W. B.), 6.
Lafond gravel and marl, West Indies, Spencer (J. W.), 2.
Lagarto beds, Neocene, Texas, Dumble, 13.
Lagarto clays, Texas, Dumble, 2.
Lahontan beds, Nevada, Louderback, 4.
Lake beds, Tertiary, Idaho, Lindgren and Drake, 1.
Lake Superior sandstone, Burwash, 1.
Lake Superior sandstone, Cambrian, Wisconsin, Collie, 1.
Lake Superior sandstone, Cambrian, Wisconsin, Grant (U. S.), 2.
Lake Superior sandstone, Cambrian, Michigan, Bayley, 1.
Lake Valley limestone, Mississippian, New Mexico, Keyes, 54.
Lakota formation, Cretaceous, Black Hills region, Stanton, 4.
Lakota formation, Cretaceous, South Dakota, Darton and Smith, 1.
Lakota formation, Cretaceous, Black Hills, Darton, 1, 8, 14, 16, 18.
Lakota sandstone, Cretaceous, Wyoming, Darton, 26.
Lakota sandstone, Cretaceous, Wyoming and South Dakota, Darton and O'Harra, 1.
Lamotte sandstone, Cambrian, Missouri, Keyes, 6.
La Motte sandstone, Cambrian, Missouri, Adams (G. I.), 3.
La Motte sandstone, Cambrian, Missouri, Bain and Ulrich, 2.
Lance Creek (Ceratops) beds, Cretaceous, Wyoming, Hatcher, 17.
Lane shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Lang division, Pliocene, Tertiary, California, Hershey, 10.
Lansdale shales, Pennsylvania, Lyman, 2.
Laona sandstone, Devonian, New York, Clarke, 19, 20.
Lapara beds, Neocene, Texas, Dumble, 13.
La Plata sandstone, Jura-Trias, Colorado, Cross and Spencer, 1.
La Plata formation, Jurassic, Colorado, Cross and Howe, 2.
La Plata sandstone, Jurassic, Colorado, Cross (W.), 7.
Laramie formation, Cretaceous, Black Hills, Darton, 1.
Laramie formation, Cretaceous, Colorado, Hills, 1.
Laramie, Cretaceous, Montana, Willis, 6.
Laramie, Cretaceous, Nebraska, Fisher (C. A.), 3.
Laramie formation, Cretaceous, North Dakota, Babcock, 2.
Laramie formation, Cretaceous, North Dakota, Wilder, 2, 7, 10.
Laramie formation, Cretaceous, Wyoming, Adams (G. I.), 4.
Laramie, Cretaceous, Wyoming, Knight (W. C.), 7.
Laramie formation, Cretaceous, Hay, 7.
Laramie formation, Cretaceous, Nebraska, Barbour (E. H.), 8.
Laramie formation, Cretaceous, Black Hills region and Wyoming, Darton, 16.
Laramie formation, Cretaceous, Wyoming, Darton, 14.

Geologic formations described—Continued.

Laramie formation, Cretaceous, Black Hills region, Wyoming, and Colorado, Darton, 18.
Laramie formation, Cretaceous, Colorado, Fenneman, 10.
Laramie formation, Cretaceous, North Dakota, Leonard, 4.
Laramie stage, Cretaceous, Wyoming, Trumbull, 1.
Lauderdale chert, Carboniferous, Alabama, Stevenson (J. J.), 4.
Laurel limestone, Silurian, Kentucky and Tennessee, Foerste, 1.
Laurel limestone, Silurian, Indiana, Foerste, 11.
Laurel limestone, Silurian, Tennessee, Foerste, 7.
Laurentian, Ontario, Bolton, 1.
Laurentian, Ontario, Graton, 2.
Lawrence beds, Carboniferous, Kansas, Wooster, 1, 2.
Lebanon limestone, Ordovician, Tennessee, Hayes and Ulrich, 1.
Lecompton limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Lecompton limestone, Carboniferous, Kansas, Beede, 6.
Lecompton beds, Carboniferous, Kansas, Wooster, 1, 2.
Leda clay, Canada, Coleman, 5.
Lee conglomerate, Carboniferous, Tennessee, Keith, 1.
Lego limestone, Silurian, Tennessee, Foerste, 7.
Leipers formation, Ordovician, Tennessee, Hayes and Ulrich, 1.
Leipers Creek limestone, Cincinnati group, Ordovician, Tennessee, Foerste, 6.
Lenox limestone member, Carboniferous, Utah, Keith, 13.
Le Roux beds, Triassic, Arizona, Ward (L. F.), 1.
Leroux member, Triassic, Arizona, Ward (L. F.), 5.
Le Roy shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Leseur dolomite, Cambrian, Missouri, Keyes, 6.
Leseuer limestone, Cambrian, Missouri, Adams (G. I.), 3.
Lewis shale, Cretaceous, Colorado, Cross and Spencer, 1.
Lewisville beds, Cretaceous, Texas, Hill (R. T.), 3.
Lexington group, Ordovician, Kentucky, Nickles, 6.
Lexington limestone, Ordovician, Kentucky, Miller (A. M.), 4.
Liberty beds, included in Richmond group, Ordovician, Ohio and Indiana, Nickles, 5.
Liberty beds, Ordovician, Indiana, Foerste, 11.
Liberty Hall limestone, Ordovician, Virginia, Campbell (H. D.), 1.

Geologic formations described—Continued.

Lignitic, Eocene, Tertiary, Louisiana, Veatch, 2.
Lignitic stage, included in Eocene, Tertiary, Louisiana, Harris, 2.
Lignitic formation, Eocene, Louisiana, Harris, 3.
Lignitic stage, Eocene, Texas, Dumble, 13.
Lignitic clay, Tertiary (Eocene), Mississippi, Logan, 2.
Lime Creek shales, Devonian, Iowa, Beyer and Williams, 2.
Lime Creek shales, Devonian, Iowa, Eckel and Bain, 1.
Linden bed, Devonian, Tennessee, Foerste, 7.
Linden limestone, Tennessee, Foerste, 5.
Linville metadiabase, Algonkian(?), North Carolina and Tennessee, Keith, 4.
Lisbon group, New Hampshire, Hitchcock (C. H.), 10.
Lisburne formation, Devonian, Alaska, Schrader, 1, 3.
Lista Blanca division, Triassic, Arizona, Dumble, 7.
Lithodendron member, Triassic, Arizona, Ward (L. F.), 5.
Little Cottonwood granite, Utah, Emmons (S. F.), 9.
Little Falls dolomite, Champlainic, New York, Clarke, 20.
Littlehorn limestone, Carboniferous, Wyoming, Darton, 16, 18.
Llanfair sandstone, Carboniferous, Pennsylvania, Butts, 7.
Lockatong, included in Newark, New Jersey, Knapp (G. N.), 1.
Lockport limestone, Silurian, New York. Synonym, Niagara limestone, Grabau, 1.
Lockport limestone, Silurian, Indiana, Kindle, 2.
Lockport dolomite, Ontaric, New York, Clarke, 20.
Logan formation, Carboniferous, Ohio, Prosser, 1, 10.
Logan group, Carboniferous, Ohio, Bownocker, 3, 5.
Logan, Carboniferous, Ohio, Stevenson (J. J.), 4.
Logan, upper part of Pocono, Carboniferous, Appalachian region, Stevenson, (J. J.), 4.
Logan sills, Minnesota, included in Keweenawan, Clements, 3.
Logana bed, Ordovician, Kentucky, Miller (A. M.), 4.
Lone Mountain limestone, Nevada, Spurr, 6.
Long Beards riffs sandstone, Devonian, New York, Luther, 2.
Longbeards riffs sandstone, Devonic, New York, Clarke, 20.
Long Branch sand, Cretaceous, New Jersey, Prather, 4.

Geologic formations described—Continued.
Long Branch sand, Cretaceous, New Jersey, Weller, 7.
Longfellow formation, Ordovician, Arizona, Lindgren, 28, 29.
Longwood red shales, Silurian, New York, Eckel, 6.
Longwood shale, Silurian, New Jersey, Kümmel and Weller, 2.
Longwood sandstone, Silurian, New Jersey, Weller, 6.
Lookout sandstone, Carboniferous, Georgia, Hayes, 5.
Lookout sandstone, Carboniferous, Georgia, McCallie, 9.
Lorraine formation, Ordovician, Canada, Ells (R. W.), 7.
Lorraine formation, Ordovician, Kentucky, Foerste, 3.
Lorraine group, Ordovician, Ohio and Indiana, Nickles, 3.
Lorraine beds, Champlainic, New York, Clarke, 20.
Lorraine formation, Ordovician, Ohio, Prosser, 10.
Lorraine stage, Ordovician, Pennsylvania, Collie, 3.
Lorraine formation, Ordovician, Indiana, Foerste, 11.
Lorraine formation, Ordovician, Michigan, Russell, 23.
Lorraine formation, Ordovician, New York, Cushing, 10.
Los Angelan epoch, Quaternary, California, Hershey, 14.
Lost Gulch monzonite, pre-Cambrian, Arizona, Ransome, 6, 13.
Louisiana limestone, Devonian, Missouri, Gallaher, 1.
Louisiana limestone, Carboniferous, Missouri, Adams (G. I.), 3.
Louisville limestone, Silurian, Tennessee, Foerste, 7.
Louisville limestone, Silurian, Indiana, Foerste, 11.
Loup Fork formation, Tertiary, Colorado, Matthew (W. D.), 2.
Loup Fork beds, Tertiary, Nebraska, Barbour (E. H.), 8.
Loup Fork formation, Tertiary, Montana, Douglass, 8.
Loup Fork stage, Miocene, Tertiary, Texas, Gidley, 4.
Loup Fork beds, Miocene, Montana, Douglass, 1.
Loup Fork beds, Miocene, South Dakota, Matthew and Gidley, 1.
Loup Fork series, Tertiary, Nebraska, Peterson, 1.
Lower Helderberg, Silurian, Ohio, Bownocker, 3, 5.
Lower Helderberg period, Silurian, New York, Schneider, 1.
Lower Helderberg or Waterline formation, Ontario, Parks, 4.
Lower Magnesian group, Silurian, Illinois, Alden, 1.

Geologic formations described—Continued.
Lowville limestone, Champlainic, New York, Clarke, 20.
Lowville limestone, Ordovician, New York, Cushing, 9.
Lowville (Birdseye) limestone, Ordovician, New York, Cushing, 10.
Loyalhanna limestone, Carboniferous, Pennsylvania, Butts, 4, 7.
Loyalhanna limestone, Carboniferous, Pennsylvania, Clapp, 4.
Lucas limestone, Silurian, Ohio, Prosser, 10.
Lucky Cuss limestone, Arizona, Church, 1.
Ludlowville shale, Devonian, New York, Clarke and Luther, 3.
Lufkin deposits (Yegua), Tertiary, Texas, Hill (R. T.), 9.
Lykins formation, Triassic (?), Colorado, Fenneman, 10.
Lyman group, New Hampshire, Hitchcock (C. H.), 10.
Lyons sandstone, Triassic (?), Colorado, Fenneman, 10.
Lytton formation, Eocene, Tertiary, Texas, Hill and Vaughan, 1.
McAdam formation, Silurian, Canada, Ami, 10.
McAlester shale, Carboniferous, Indian Territory, Taff, 2, 3, 4.
McCloud limestone, Carboniferous, California, Diller, 12.
McCloud shale, Carboniferous, California, Diller, 12.
McElmo formation, Jura-Trias, Colorado, Cross and Spencer, 1.
McElmo formation, Colorado, Cross and Howe, 2.
McElmo formation, Jurassic, Colorado, Cross (W.), 7.
Madera diorite, pre-Cambrian, Arizona, Ransome, 6, 13.
Madison bed, Ordovician, Indiana, Foerste, 11.
Madison limestone, Carboniferous, Montana, Weed, 5.
Madison formation, included in Richmond group, Ordovician, Ohio and Indiana, Nickles, 5.
Madison Valley beds, Tertiary, Montana, Douglass, 8.
Madrid coal group, Cretaceous, New Mexico, Johnson (D. W.), 4.
Magnesian formation, Wisconsin, Weidman, 5.
Magpie dolomite, Permian, Oklahoma, Gould, 9.
Mahoning limestone, Carboniferous, West Virginia, White (I. C.), 7.
Mahoning sandstone, Carboniferous, Missouri, Gallaher, 1.
Mahoning sandstone, member of Conemaugh formation, Carboniferous, Pennsylvania, Campbell (M. R.), 8.
Mahoning sandstone stage, Carboniferous, West Virginia, White (I. C.), 7.

Geologic formations described—Continued.
Mahoning sandstone, Carboniferous, Pennsylvania, Butts, 4, 6, 7.
Mahoning sandstone, Carboniferous. Pennsylvania, Richardson (G. B.), 3.
Mahoning sandstone, member of the Conemaugh formation, Carboniferous, Pennsylvania, Campbell (M. R.), 18.
Mahoning limestone, Carboniferous, Maryland, Clark and Martin, 6.
Mahoning sandstone, Carboniferous, Maryland, Clark and Martin, 6.
Mahoning sandstone, Carboniferous, Pennsylvania, Stone (R. W.), 7, 8.
Mahoning sandstone, Carboniferous, Pennsylvania, Woolsey, 3.
Main Street limestone, Cretaceous, Texas, Hill (R. T.), 3.
Malone formation, Jurassic, Texas, Richardson (G. B.), 4.
Malone formation, Jurassic, Texas, Cragin, 2.
Mal Pais gravel, Cuba, Hayes, Vaughan, and Spencer, 1.
Maltrata, Cretaceous, Mexico, Villarello and Böse, 1.
Maltrata limestone, Cretaceous, Mexico, Hall (C. E.), 1.
Manastash formation, Tertiary, Washington, Smith (G. O.), 8, 13.
Mancos shale, Cretaceous, Colorado, Cross and Spencer, 1.
Mancos shale, Cretaceous, Colorado, Cross (W.), 7.
Mangum dolomite member, Carboniferous (Permian), Oklahoma, Gould, 14.
Manhasset beds, Quaternary, New York, Veatch, 4.
Manitou limestone, Ordovician, Colorado, Darton, 16, 18.
Mankomen formation, Carboniferous (Permian), Alaska, Mendenhall, 8.
Manlius limestone, Silurian, New York, Grabau, 1, 9.
Manlius limestone, Silurian, New Jersey, Weller, 6.
Manlius limestone, Silurian, New York, Hartnagel, 1.
Manlius, Silurian, New York, Schuchert, 4.
Manlius limestone, Silurian, New York, Van Ingen and Clark, 1.
Manlius formation, Ontaric, Maryland, Schuchert, 7.
Manlius limestone, Ontaric, New York, Clarke, 20.
Manlius limestone, New York, Shimer 5.
Manlius limestone, Silurian, New York, Clarke and Luther, 3.
Mannetto gravel, Quaternary, New York, Fuller, 29.
Mannie shale, included in Richmond, Ordovician, Tennessee, Foerste, 6.
Mansfield group, Carboniferous, Indiana, Ashley, 1.

Geologic formations described—Continued.
Mansfield sandstone, Carboniferous, Indiana, Newsom, 3.
Mansfield sandstone, Carboniferous, Indiana, Hopkins (T. C.), 11.
Mansfield sandstone, Carboniferous, Kentucky, Ulrich, 8.
Mansfield sandstone, Carboniferous (Mississippian), Illinois, Bain, 19.
Maquoketa or Hudson River, Ordovician, Iowa, Calvin, 10.
Maquoketa shales, Iowa, Beyer and Williams, 2.
Maquoketa shale, Ordovician, Illinois, Bain, 11.
Maquoketa stage, Ordovician, Iowa, Savage, 8.
Maquoketa shales, Ordovician, Iowa, Udden (Jon A.), 1.
Marble Falls limestone, Carboniferous, Texas, Hill (R. T.), 3.
Marcellus shale, Devonian, New York, Schneider, 1.
Marcellus shales, included in Hamilton, Devonian, New York, Cleland, 2.
Marcellus shale, Devonian, New York, Clarke and Luther, 1–3.
Mariato formation, Pleistocene, Panama, Hershey, 5.
Marietta sandstones, Carboniferous, West Virginia, White (I. C.), 7.
Marine beds, Eocene, Texas, Dumble, 13.
Marion formation, Permian, Oklahoma, Gould, 6.
Marion formation, Carboniferous, Kansas, Prosser, 7.
Marion formation, Carboniferous, Kansas, Adams, Girty, and White, 1.
Marion formation, Carboniferous, Kansas, Prosser and Beede, 1.
Marion beds, Carboniferous, Kansas, Wooster, 1, 2.
Mark West andesite, Tertiary, California, Osmont, 1.
Marshall, Carboniferous, Michigan, Gregory (W. M.), 3.
Marshalltown bed, Cretaceous, New Jersey, Kümmel and Knapp, 1.
Marshalltown clay, Cretaceous, New Jersey, Prather, 4.
Martin Canyon beds, Tertiary, Colorado, Matthew (W. D.), 2.
Martin limestone, Devonian, Arizona, Ransome, 10, 11, 14.
Martinez, California, Lawson (A. C.), 9.
Martinsburg shale, Ordovician, Virginia, Watson (T. L.), 17.
Maryville limestone, Cambrian, Tennessee, Keith, 1, 11.
Mascall formation, Tertiary, Oregon. Included in Miocene, Merriam (J. C.), 1.
Mascall formation, Tertiary, Oregon, Knowlton, 13.

Geologic formations described—Continued.
Mascarene series, Devonian, Canada, Ells (R. W.), 17.
Mason shales, Carboniferous, West Virginia, White (I. C.), 7.
Matawan formation, Cretaceous, Darton and Keith, 1.
Matawan formation, Upper Cretaceous, Maryland, Shattuck, 5.
Matawan formation, Cretaceous, New Jersey, Berry, 5.
Matawan formation, Cretaceous, Atlantic coast region, Clark (W. B.), 6.
Matawan formation, Cretaceous, Maryland, Delaware, and New Jersey, Clark (W. B.), 6.
Matawan formation, Cretaceous, New Jersey, Knapp (G. N.), 2.
Matawan formation, Cretaceous, New Jersey, Prather, 4.
Matfield shales, Carboniferous, Kansas, Prosser, 7.
Matfield shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Matfield shale, Carboniferous, Kansas, Prosser and Beede, 1.
Matfield formation, Carboniferous, Kansas, Beede and Sellards, 1.
Mauch Chunk formation, Carboniferous, Maryland, Prosser, 3.
Mauch Chunk, Carboniferous, Pennsylvania, Stevenson (J. J.), 1.
Mauch Chunk formation, Carboniferous, Maryland, Martin (G. C.), 1.
Mauch Chunk formation, Carboniferous, Pennsylvania, Fuller (M. L.), 3.
Mauch Chunk, Lower Carboniferous, Appalachian region, Stevenson (J. J.), 4.
Mauch Chunk formation, Carboniferous, Pennsylvania, Campbell (M. R.), 6, 8, 18.
Mauch Chunk shale, Carboniferous, Pennsylvania, Fuller and Alden, 1, 2.
Mauch Chunk formation, Carboniferous, Pennsylvania, Butts, 4, 6, 7.
Mauch Chunk shale, Carboniferous, Pennsylvania, Richardson (G. B.), 3.
Mauch Chunk formation, Carboniferous, Pennsylvania, Stone (R. W.), 6, 7.
Mauch Chunk formation, Carboniferous (Mississippian), Pennsylvania, Woolsey, 3.
Max Patch granite, Archean, North Carolina and Tennessee, Keith, 9, 11.
Maxville limestone, Carboniferous, Ohio, Prosser, 10.
Maxville limestone, Lower Carboniferous, Ohio, Stevenson (J. J.), 4.
Maxville limestone, Carboniferous, Ohio, Orton and Peppel, 1.
Maysville, Ordovician, Ohio, Indiana, and Kentucky, Foerste, 12.
Maysville group, Ordovician, Kentucky, Nickles, 6.

Geologic formations described—Continued.
Meadville shales, Carboniferous, Pennsylvania, Stevenson (J. J.), 4.
Medicine Lodge gypsum, Permian, Oklahoma, Gould, 9.
Medicine Lodge beds, Carboniferous, Kansas, Wooster, 1, 2.
Medicine Lodge gypsum member, Carboniferous (Permian), Oklahoma, Gould, 14.
Medina, Silurian, New York, Grabau, 1.
Medina shales, Silurian, Canada, Ells (R. W.), 7.
Medina sandstone, Silurian, New Jersey, Weller, 6.
Medina shales, Silurian, Ohio, Prosser, 10.
Medina formation, Silurian, Canada, Corkill, 2.
Meguma series, Nova Scotia, Woodman, 1, 2.
Mellenia series, Tertiary, California, Hershey, 10.
Menominee series, Algonkian, Michigan, Bayley, 1.
Menteth limestone, Devonian, New York, Clarke and Luther, 1.
Mentor beds, included in the Dakota Cretaceous, Kansas, Jones (A.W.), 1.
Meramec group, Mississippian, Mississippi Valley, Ulrich, 8.
Merced series, California, Arnold and Arnold, 1.
Merced, California, Lawson (A. C.), 9.
Mercer group, included in Pottsville, Carboniferous, Pennsylvania, White and Campbell, 1.
Mercer group, Carboniferous, Appalachian region, White (D.), 13.
Mercer limestone, Carboniferous, Ohio, Orton and Peppel, 1.
Mercer shale, Carboniferous, Pennsylvania, Butts, 4, 6.
Mercer (Tionesta) limestone, Carboniferous, Pennsylvania, Clapp, 4.
Merchantville clay, Cretaceous, New Jersey, Kümmel and Knapp, 1.
Merom group, Carboniferous, Illinois, Ashley, 1.
Merom sandstone, Carboniferous (?), Indiana, Newsom, 3.
Merom sandstone, Carboniferous, Indiana, Hopkins (T. C.), 11.
Mesa Verde formation, Cretaceous, Colorado, Cross and Spencer, 1.
Michigan series, Carboniferous, Michigan, Russell, 6.
Michigan group, Carboniferous, Michigan, Grimsley, 6.
Michigan series, Carboniferous, Michigan, Gregory (W. M.), 3.
Michipicoten schists, Canada, Bell (J. M.), 3.
Middlesex shales, Devonian, New York, Clarke, 19, 20.
Middlesex black shale, Devonian, New York, Clarke and Luther, 1.

Geologic formations described—Continued.
Midway stage, included in Eocene, Tertiary, Louisiana, Harris, 2.
Milburn beds, Carboniferous, Texas, Hill (R. T.), 3.
Milbury limestone, Massachusetts, Perry and Emerson, 1.
Millersburg formation, Carboniferous, Indiana, Fuller and Ashley, 1.
Millersburg formation, Carboniferous, Indiana, Fuller and Clapp, 2.
Million beds, Ordovician, Kentucky, Nickles, 6.
Millsap division, Carboniferous, Texas, Taff, 4.
Millsap limestone, Carboniferous (Mississippian), Colorado, Darton, 16.
Millsap limestone, Carboniferous-Triassic, Colorado, Darton, 18.
Millstone grit, Carboniferous, Missouri, Adams (G. I.), 3.
Minnekahta, Permian, Carboniferous, South Dakota, Richardson (G. B.), 2.
Minnekahta limestone (Permian?), Carboniferous, Wyoming, Smith (W. S. T.), 1.
Minnekahta limestone, Carboniferous, Black Hills region and Wyoming, Darton, 8, 14, 16, 18, 26.
Minnekahta limestone, Carboniferous, South Dakota, Darton and Smith, 1.
Minnekahta limestone, Carboniferous (Permian), Black Hills region, Jaggar, 5.
Minnekahta limestone, Carboniferous, Wyoming, Darton and O'Harra, 1.
Minnelusa formation, Carboniferous, Black Hills, Darton, 1, 8, 16, 18.
Minnelusa formation, Carboniferous, Black Hills region, Jaggar, 5.
Minnelusa sandstone, Carboniferous, South Dakota, Darton and Smith, 1.
Minnelusa sandstone, Carboniferous, South Dakota, Darton, 14.
Minnelusa sandstone, Carboniferous, Wyoming, Darton and O'Harra, 1.
Minnelusa sandstone, Carboniferous, Wyoming and South Dakota, Darton, 26.
Minnewaste limestone, Cretaceous, Black Hills, Darton, 1, 8, 16, 18.
Minnewaste limestone, Cretaceous, South Dakota, Darton and Smith, 1.
Mississippian series, Carboniferous, Iowa, Udden, 2.
Missourian stage, Carboniferous, Iowa, Calvin, 1.
Missourian stage, Carboniferous, Iowa, Udden, 3, 8.
Missourian division, Carboniferous, Kansas, Missouri, Bain, 3.
Missourian formation, Carboniferous, Iowa, Eckel and Bain, 1.
Mitchell limestone, Carboniferous, Indiana, Hopkins (T. C.), 8.
Mitchell limestone, Carboniferous, Indiana, Newsom, 3.

Geologic formations described—Continued.
Mitchell limestone, Lower Carboniferous, Indiana, Ashley, 2.
Mitchell limestone, Mississippian, Indiana, Hopkins (T. C.), 11.
Moccasin limestone, Ordovician, Tennessee, Keith, 1, 11.
Modoc limestone, Carboniferous, Arizona, Lindgren, 28, 29.
Moencopie beds, Triassic, Arizona, Ward (L. F.), 1, 5.
Moencopie shales, Utah, Huntington and Goldthwait, 2.
Mohawkian, Champlainic, New York, Clarke, 20.
Molas formation, Carboniferous, Colorado, Cross and Howe, 1.
Molas formation, Carboniferous (Pensylvanian), Colorado, Cross and Howe, 3.
Monmouth formation, Cretaceous, Atlantic coast region, Darton and Keith, 1.
Monmouth formation, Upper Cretaceous, Maryland, Shattuck, 5.
Monmouth formation, Cretaceous, Atlantic coast region, Clarke (W. B.), 6.
Monmouth formation, Cretaceous, New Jersey, Prather, 4.
Monongahela formation, Carboniferous, Maryland, Prosser, 3, 4.
Monongahela formation, Carboniferous, Maryland (included in Coal Measures, includes Pittsburg coal, Redstone limestone, Redstone coal, Sewickley limestone, Lower Sewickley coal, Upper Sewickley or Tyson coal, Sewickley sandstone, Uniontown coal, Uniontown sandstone, Waynesburg limestone, and Waynesburg coal), Clark and Martin, 5.
Monongahela formation, Carboniferous, Maryland, Martin (G. C.), 1.
Monongahela formation (includes Elk Garden coal, Tyson coal, Koontz coal), Carboniferous, Maryland, White (D.), 7.
Monongahela formation (includes Pittsburg coal, Redstone coal, Sewickley coal, Uniontown coal, Waynesburg coal), Carboniferous, Pennsylvania, White and Campbell, 1.
Monongahela formation, Carboniferous, Pennsylvania, Campbell (M. R.), 6, 8, 18.
Monongahela formation (Upper Productive Coal Measures), Carboniferous, Ohio, Prosser, 10.
Monongahela series, Carboniferous, West Virginia, White (I. C.), 7.
Monongahela formation, Carboniferous, Pennsylvania, Stone (R. W.), 2.
Monongahela formation, Carboniferous, Maryland, Clark and Martin, 6.
Monongahela formation, Carboniferous, Maryland, Martin, 16.

Geologic formations described—Continued.
Monongahela formation, Carboniferous, Pennsylvania, Butts, 7.
Monongahela formation, Carboniferous, Pennsylvania, Stone (R. W.), 6–8.
Monongahela formation, Carboniferous, (Pennsylvanian), Pennsylvania, Woolsey, 3.
Monroe formation, Silurian, Michigan, Russell, 6, 23, 45.
Monroe shales, Devonian, New Jersey, Kümmel and Weller, 2.
Monroe shales, Devonian, New York, Eckel, 6.
Monroe beds, Pennsylvania series, Iowa, Beyer and Young, 1.
Monroe formation, Silurian, Ohio, Prosser, 10.
Monroe shale, Devonic, New York, Clarke, 20.
Monroe shales, Devonian, New Jersey, Weller, 6.
Monroe Creek beds, Tertiary, Nebraska, Peterson, 1.
Montana group, Cretaceous, Nebraska, Barbour (E. H.), 8.
Montana group, Cretaceous, South Dakota, Todd (J. E.), 15.
Montana group, Cretaceous, South Dakota, Todd and Hall, 3.
Montana formation, Cretaceous, Montana, Pirsson, 4.
Montana formation, Cretaceous, North Dakota, Leonard, 4.
Montauk drift, Quaternary, New York, Fuller, 29.
Monte Cristo diorite, probably pre-Permian, Alaska, Mendenhall and Schrader, 1.
Monterey series, California, Lawson and Palache, 1.
Monterey, California, Lawson (A. C.), 9.
Monterey, California, Osmont, 1.
Monterey series, Miocene, California, Arnold, 2.
Monterey shales, Miocene, California, Anderson (F. M.), 6.
Monterey shale, Miocene, California, Haehl and Arnold, 1.
Monterey shale, Neocene, California, Fairbanks, 7.
Monterey shales, Tertiary, California, Anderson, 7.
Monterey shale, Tertiary, California, Bagg, 9.
Montezuma schist, Algonkian?, North Carolina, Keith, 4.
Montijo conglomerate, Panama, Hershey, 5.
Monument Creek formation, Colorado, Lee (W. T.), 2.
Monument Creek formation, Tertiary, Darton, 23.
Moorefield shale, Carboniferous, Arkansas, Adams (G. I.), 15.

Geologic formations described—Continued.
Moorefield shale, Carboniferous, Arkansas, Ulrich, 5.
Moosehide diabase, Canada, McConnell, 5.
Moreau sandstone, Ordovician, Missouri, Gallaher, 1.
Morenci formation, Devonian, Arizona, Lindgren, 28, 29.
Morgantown sandstone, Carboniferous, West Virginia, White (I. C.), 7.
Morgantown sandstone, member of Conemaugh formation, Carboniferous, Pennsylvania, Campbell (M. R.), 8, 18.
Morgantown sandstone, Carboniferous, Pennsylvania, Richardson (G. B.), 3.
Morgantown sandstone, Carboniferous, Maryland, Clark and Martin, 6.
Morgantown sandstone, Carboniferous, Pennsylvania, Stone (R. W.), 7, 8.
Morita formation, Cretaceous, Arizona, Ransome, 10, 11, 14.
Morris granite, New York, Cushing, 10.
Morrison formation, Jurassic, Colorado, Lee (W. T.), 1.
Morrison shales, Cretaceous, Colorado, Lee (W. T.), 3.
Morrison clay, Jurassic or Lower Cretaceous, Wyoming, Smith (W. S. T.), 1.
Morrison formation, Cretaceous, South Dakota, Darton and Smith, 1.
Morrison formation, Jurassic, Black Hills region, Jaggar, 5.
Morrison shales, Cretaceous, Black Hills region and Wyoming, Darton, 16.
Morrison shale, Cretaceous, Wyoming, South Dakota, Darton, 14.
Morrison formation, Colorado and Wyoming, Stanton, 8.
Morrison formation, Jurassic, Colorado, Fenneman, 10.
Morrison shale, Cretaceous, Black Hills region, Darton, 18.
Morrison shale, Cretaceous, Wyoming, Darton, 26.
Morrison shale, Cretaceous, Wyoming and South Dakota, Darton and O'Harra, 1.
Morrow formation, Carboniferous, Arkansas, Adams (G. I.), 15.
Morrow formation, Carboniferous, Arkansas, Ulrich, 5.
Morrow formation, Carboniferous, Arkansas, Adams and Ulrich, 1.
Morrow formation, Carboniferous, Indian Territory, Taff, 17.
Moscow shale, Devonic, New York, Clarke, 20.
Moscow shales, included in Hamilton Devonian, New York, Cleland, 2.
Moscow shale, Devonian, New York, Clarke and Luther, 1–3.
Mottled limestone (upper and lower), Ordovician, Canada, Dowling, 1.

Geologic formations described—Continued.
Mount Auburn beds, Ordovician, Ohio and Indiana, Nickles, 3.
Mount Auburn bed, Cincinnati series, Ordovician, Foerste, 8, 11.
Mount Auburn beds, Ordovician, Kentucky, Nickles, 6.
Mount Baker lava, Quaternary, Washington, Smith and Calkins, 1.
Mount Hope beds, Ordovician, Ohio and Indiana, Nickles, 3.
Mount Hope beds, Ordovician, Kentucky, Nickles, 6.
Mount Laurel sand, Cretaceous, New Jersey, Prather, 4.
Mount Pleasant conglomerate, Carboniferous, Pennsylvania, Stevenson (J. J.), 4.
Mount Stuart granodiorite, pre-Tertiary, Washington, Smith (G. O.), 13.
Mural limestone, Cretaceous, Arizona, Ransome, 10, 11, 14.
Murat limestone, Ordovician, Virginia, Campbell (H. D.), 1.
Murray slate, Cambrian, North Carolina and Tennessee, Keith, 9, 11.
Myrtle formation, Cretaceous, Oregon, Diller, 4, 11.
Myrtle group, Cretaceous, Oregon, Louderback, 6.
Nabesna limestone, Permian, Alaska, Mendenhall and Schrader, 1.
Nacatoch (Washington) sand, Louisiana, Veatch, 7.
Naco limestone, Carboniferous, Arizona, Ransome, 11, 14.
Naknek formation, Jurassic, Alaska, Martin, 11.
Naknek formation, Jurassic, Alaska, Stanton and Martin, 1.
Nanjemoy formation or stage, Eocene, Maryland. Includes Patapsco and Woodstock members or substages. Clark and Martin, 1.
Nantahala slate, Cambrian, North Carolina and Tennessee, Keith, 9.
Nanushuk series, Cretaceous, Alaska, Schrader, 1, 3.
Naples beds, Devonic, New York Clarke, 20.
Napoleon, Carboniferous, Michigan, Gregory (W. M.), 3.
Nasina series, Canada, McConnell, 5.
Natural Bridge limestone, Cambrian and Ordovician, Virginia, Campbell (H. D.), 1.
Navarro beds, Cretaceous, Texas, Hill (R. T.), 3.
Navesink marls, included in Monmouth formation, Cretaceous, Maryland, Shattuck, 5.
Navesink marl, Cretaceous, New Jersey, Prather, 4.
Nebo quartzite, Cambrian, North Carolina and Tennessee, Keith, 9, 11.

Geologic formations described—Continued.
Nebraska beds, Tertiary, Nebraska, Peterson, 1.
Necoxtla, Cretaceous, Mexico, Villarello and Böse, 1.
Necoxtla slates, Cretaceous, Mexico, Hall (C. E.), 1.
Needle Mountains group, Algonkian, Colorado, Cross and Howe, 3.
Negaunee formation, Algonkian, Bayley, 1.
Neosho limestone, Carboniferous, Kansas, Smith (A. J.), 3.
Neosho member, Carboniferous, Kansas, Prosser and Beede, 1.
Neosho member, Carboniferous, Kansas, Beede and Sellards, 1.
Neva limestone, Carboniferous, Kansas, Beede, 6.
Neva limestone, Carboniferous, Kansas Prosser, 7.
Neva limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Neva limestone, Carboniferous, Kansas, Crevecœur, 1.
Neva limestone, Carboniferous, Kansas, Prosser and Beede, 1.
Nevada limestone, Nevada, Spurr, 6.
New Albany shale, Devonian of Indiana, Kindle, 1.
New Albany black shale, Devonian, Indiana, Siebenthal, 2.
New Albany black shale, Devonian, Indiana, Ashley, 2.
New Albany black shale (Genesee), Devonian, Indiana, Newsom, 3.
New Albany black shale, Devonian, Indiana, Hopkins (T. C.), 11.
Newark beds, Juratrias, New York, Eckel, 6.
Newark group, Juratrias, New Jersey, Merrill and others, 1.
Newark system, Atlantic coast region, Hobbs, 6.
Newark system, New Jersey, Knapp (C. N.), 1.
Newfoundland grit, Devonian, New Jersey, Kümmel and Weller, 2.
Newfoundland grit, Devonian, New Jersey, Weller, 6.
Newfoundland quartzite, Devonian, New York, Eckel, 6.
New Glasgow conglomerate, Permian, Carboniferous, Canada, Fletcher, 1.
New Providence shale, included in Knobstone group, Carboniferous, Indiana, Newsom, 3.
Newman limestone, Carboniferous, Virginia, Stevenson (J. J.), 4.
Newman limestone, Carboniferous, Tennessee, Keith, 1, 11.
New Red, Pennsylvania, Lyman, 2.
New Richmond sandstone, Ordovician, Illinois, Bain, 11.
New Scotland beds, Devonian, New Jersey, Weller, 6.

Geologic formations described—Continued.
New Scotland beds, Devonian, New York, Van Ingen and Clark, 1.
New Scotland beds, Devonic, New York, Clarke, 20.
New Scotland limestone, Devonic, Maryland, Schuchert, 7.
New Scotland shales, Devonian, New York, Grabau, 9.
New Scotland beds, New York, Shimer, 5.
Niagara formation, Silurian, Maryland, Prosser, 3.
Niagara group, Silurian, Illinois, Alden, 1.
Niagara beds, Silurian, Indiana, Kindle, 3.
Niagara group, Silurian, Indiana, Newsom, 3.
Niagara group, Silurian, New York, Schneider, 1.
Niagara group, Silurian, Ohio, Prosser, 10.
Niagara limestone, Ontario, Parks, 4.
Niagara limestone, Silurian, Missouri, Gallaher, 1.
Niagaran, Ontaric, New York, Clarke, 20.
Niagara group, Silurian, Indiana, Kindle, 6.
Niagara limestone, Silurian, Indiana, Foerste, 11.
Niagara, Silurian, New Hampshire, Hitchcock (C. H.), 10.
Niagara dolomite, Silurian, Illinois, Bain, 11.
Niagara formation, Silurian, Canada, Corkill, 2.
Niagara formation, Silurian, Maryland, Uhler, 1.
Niagara limestone, Silurian, Iowa, Udden (Jon A.), 1.
Niagara limestone, Silurian, Michigan, Russell, 23, 45.
Niagara series, Silurian, Iowa, Savage, 8.
Nichols slate, Cambrian, North Carolina and Tennessee, Keith, 9, 11.
Nikolai greenstone, Alaska, Schrader and Spencer, 1.
Nikolai greenstone, probably Carboniferous, Alaska, Mendenhall and Schrader, 1.
Nikolai greenstone, Carboniferous, Alaska, Mendenhall, 8.
Nineveh sandstone, Carboniferous, West Virginia, White (I. C.), 7.
Nineveh limestone, Carboniferous, West Virginia, White (I. C.), 7.
Niobrara formation, Cretaceous, Black Hills, Darton, 1, 8.
Niobrara formation, Cretaceous, North Dakota, Babcock, 2.
Niobrara formation, Cretaceous, Colorado, Hatcher, 6.
Niobrara group, Cretaceous, Kansas, Lindgren, 8.

Geologic formations described—Continued.
Niobrara formation, Cretaceous, South Dakota, Todd (J. E.), 9–11, 15.
Niobrara formation, Cretaceous, Nebraska, Barbour (E. H.), 8.
Niobrara formation, Cretaceous, South Dakota, Todd and Hall, 1–3.
Niobrara formation, Cretaceous, Black Hills region, Wyoming and Colorado, Darton, 16, 18.
Niobrara formation, Cretaceous, South Dakota, Darton and Smith, 1.
Niobrara formation, Cretaceous, Wyoming, Darton, 14.
Niobrara formation, Cretaceous, North Dakota, Leonard, 4.
Niobrara formation, Cretaceous, Colorado, Fenneman, 10.
Niobrara formation, Cretaceous, Wyoming and South Dakota, Darton and O'Harra, 1.
Niobrara stage, Cretaceous, Wyoming, Trumbull, 1.
Nipigon series, Canada, Smith (W. N.), 1.
Nishnabotna stage, Cretaceous, Iowa, Udden, 8.
Noblesville dolomite, Silurian, Indiana, Kindle, 6.
Noel shale, Carboniferous, Arkansas, Adams (G. I.), 15.
Noel shale, Carboniferous, Arkansas, Ulrich, 5.
Nogales division, Tertiary, Arizona, Dumble, 7.
Nolichucky shale, Cambrian, Tennessee, Keith, 1, 9, 11.
Nome series, Alaska, Brooks and others, 1.
Nome series, Paleozoic and Mesozoic, Alaska, Collier, 1.
Norman division, Permian, Oklahoma, Gould, 9.
Normanskill shale, Champlainic, New York, Clarke, 20.
Northbridge gneiss, Massachusetts, Perry and Emerson, 1.
North Haven greenstones, Maine, Smith (G. O.), 2.
North View sandstone and shale, Carboniferous, Missouri, Weller, 1.
Nulato sandstone, Alaska, Schrader and Spencer, 1.
Nunda formation, Devonian, Pennsylvania, Butts, 7.
Nussbaum formation, Neocene, Colorado, Hills, 1.
Nuttall sandstone, Carboniferous, West Virginia, Campbell (M. R.), 5.
Nuttall sandstone, Carboniferous, West Virginia, White (I. C.), 7.
Oak Grove sands, Tertiary, Florida, Dall, 8.
Oak Grove sands, Tertiary, Florida, Maury, 1.
Oakland, California, Lawson (A. C.), 9.

Geologic formations described—Continued.

Oakville Beds, Neocene, Texas, Dumble, 13.

Ocala limestone, Tertiary, Florida, Dall, 8.

Ocala nummilitic limestone, Tertiary, Florida, Maury, 1.

Ocoee formation, upper Paleozoic, Alabama, Smith (E. A.), 1.

Ogallala formation, Tertiary, Wyoming, Nebraska, Adams (G. I.), 4.

Ogallala formation, Pliocene (?), Tertiary, Nebraska, Barbour (E. H.), 8.

Ogallala formation, Tertiary, Nebraska, Darton, 10, 18.

Ogallala (?) formation, Tertiary, South Dakota, Reagan, 5.

Ogden quartzite, Nevada, Spurr, 6.

Ogden quartzite, Devonian, Utah and Nevada, Berkey, 8.

Ogishke conglomerate, Algonkian, Minnesota, Clements, 3.

Ohara limestone, Mississippian, Kentucky, Ulrich, 8.

Ohara member, Carboniferous (Mississippian), Illinois, Bain, 19.

Ohio shale, Devonian, Ohio, Claypole, 5.

Ohio shale, Devonian, Ohio, Prosser, 10, 13.

Ohio shale, Devonian, Illinois, Bain, 19.

Ohio shale, Devonian, Illinois, Ulrich, 8.

Ohio River formation, post-Carboniferous (Tertiary?), Indiana, Ashley, 2.

Oil Lake group, Devonian, Pennsylvania, Stevenson (J. J.), 4.

Olean conglomerate, Carbonic, New York, Clarke, 20.

Olean conglomerate, Carboniferous, New York, Glenn, 1.

Olentangy shale, Devonian, Ohio, Prosser, 10, 13.

Olpe shales, Carboniferous, Kansas, Beede, 6.

Olpe shales, Carboniferous, Kansas, Adams, Girty, and White, 1.

Onaga limestone, Carboniferous, Kansas, Crevecœur, 1.

Oneida Conglomerate, Champlainic, New York, Clarke, 20.

Oneonta beds, Devonic, New York, Clarke, 20.

Oneota limestone, Iowa, Beyer and Williams, 2.

Oneota dolomite, Ordovician, Illinois, Bain, 11.

Onondaga limestone, Devonian, New York, Grabau, 1, 9.

Onondaga, Ontario, Parks, 4.

Onondaga limestone, Devonian, New Jersey, Weller, 6.

Onondaga limestone, Devonian, New York, Schneider, 1.

Onondaga limestone, Devonian, New York, Van Ingen and Clark, 1.

Onondaga limestone, Devonic, New York, Clarke, 20.

Geologic formations described—Continued.

Onondaga limestone, Devonian, Tennessee, Foerste, 7.

Onondaga limestone, Devonian, New York, Clarke and Luther, 1–3.

Onondaga formation, Silurian, Canada, Corkill, 2.

Onondaga limestone, New York, Shimer, 5.

Ontaric, New York, Clarke, 20.

Oolagah limestone, Carboniferous, Indian Territory, Adams, Girty, and White, 1.

Opeche formation, Carboniferous, Black Hills, Darton, 1, 8.

Opeche, Permian, Carboniferous, South Dakota, Richardson (G. B.), 2.

Opeche formation (Permian?), Carboniferous, Wyoming, Smith (W. S. T.), 1.

Opeche formation, Carboniferous, Black Hills region and Wyoming, Darton, 16.

Opeche formation, Carboniferous, South Dakota, Darton and Smith, 1.

Opeche formation, Carboniferous, Wyoming, South Dakota, Darton, 14.

Opeche formation, Carboniferous, Black Hills region and Wyoming, Darton, 18.

Opeche formation, Carboniferous, Wyoming, Darton and O'Harra, 1.

Opeche formation, Carboniferous, Wyoming and South Dakota, Darton, 26.

Orange sands, Texas, Dumble, 2.

Orange sand (Lafayette) formation, Tertiary (Pliocene), Mississippi, Logan, 2.

Orca series, Alaska, Schrader and Spencer, 1.

Oread limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.

Oregon bed, Ordovician, Kentucky, Miller (A. M.), 4.

Orindan formation, California, Lawson and Palache, 1.

Orindan, California, Osmont, 1.

Oriskanian, Devonic, New York, Clarke, 20.

Oriskany sandstone, Devonian, Maryland, Prosser, 3.

Oriskany, Ontario, Parks, 4.

Oriskany beds, Devonian, New York, Grabau, 9.

Oriskany beds, Devonian, New York, Van Ingen and Clark, 1.

Oriskany beds, Devonic, New York, Clarke, 20.

Oriskany formation, Devonian, New Jersey, Weller, 6.

Oriskany formation, Devonic, Maryland, Schuchert, 7.

Oriskany formation, Devonian, Canada, Corkill, 2.

Oriskany limestone, New York, Shimer, 5.

Geologic formations described—Continued.
Oriskany period, Devonian, New York, Schneider, 1.
Oriskany quartzite, Devonian, New York, Clarke and Luther, 3.
Oriskany sandstone, Devonian, Missouri, Gallaher, 1.
Oriskany sandstone, Devonian, New York, Clarke and Luther, 1.
Osgood bed, Silurian, Kentucky and Tennessee, Foerste, 7.
Osgood bed, Silurian, Indiana, Foerste, 11.
Osgood beds, Silurian, Ohio, Prosser, 10.
Osos basalt, California, Fairbanks, 7.
Oswayo beds, Carbonic, New York, Clarke, 20.
Oswayo beds, Carboniferous, New York, Glenn, 1.
Oswayo formation, Devono-Carboniferous, Pennsylvania, Fuller and Alden, 1, 2.
Oswegan, Ontaric, New York, Clarke, 20.
Otero marls, Tertiary (?), New Mexico, Herrick (C. L.), 6.
Otis, Devonian, Iowa, Norton, 1.
Otselic shale and sandstone, Devonic, New York, Clarke, 20.
Otterdale sandstones, Triassic, Virginia, Woodworth, 4.
Ouray limestones, Devonian, Colorado, Purington, 3.
Ouray limestone, Devonian and Mississippian, Colorado, Cross (W.), 5.
Ouray limestone, Devono-Carboniferous, Colorado, Cross (W.), 7.
Ouray limestone, Devonian and Mississippian, Colorado, Cross and Howe, 1, 3.
Oxmoor sandstone, Carboniferous, Georgia, Hayes, 5.
Oxmoor, Carboniferous, Alabama, Stevenson (J. J.), 4.
Ozarkian, Hershey, 8.
Pacific sandstone, Cambro-Ordovician, Missouri, Ball, 1.
Pacific sandstone, Ordovician, Missouri, Ball and Smith, 1.
Pahasapa formation, Carboniferous, Black Hills region, Jaggar, 5.
Pahasapa limestone, Carboniferous, Black Hills, Darton, 1, 16, 18.
Pahasapa limestone, Carboniferous, Wyoming, South Dakota, Darton, 14.
Pahasapa limestone, Carboniferous, Wyoming, Darton and O'Harra, 1.
Pahasapa limestone, Carboniferous, Wyoming and South Dakota, Darton, 26.
Painted Desert beds, Triassic, Arizona, Ward (L. F.), 1, 5.
Painted Desert formation, Utah, Huntington and Goldthwait, 2.
Palisade conglomerate, Tertiary, Alaska, Collier, 2.

Geologic formations described—Continued.
Palisade diabase, Juratrias, New Jersey, Merrill and others, 1.
Paluxy sands, Cretaceous, Texas, Hill (A. T.), 3.
Paloduro beds, Miocene, Tertiary, Texas, Gidley, 4.
Pamunkey formation, Tertiary, Atlantic coast region, Darton and Keith, 1.
Pamunkey formation, Tertiary, Virginia, North Carolina, Darton, 7.
Panama formation, Hershey, 5.
Panama conglomerate, Carbonic, New York, Clarke, 20.
Panhandle beds, Miocene, Tertiary, Texas, Gidley, 4.
Parkville limestone, Carboniferous, Missouri, Gallaher, 1.
Parrish limestone, Devonian, New York, Clarke and Luther, 1, 2.
Parsons limestone, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Parsons limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Parting quartzite, Devonian, Colorado, Cross (W.), 5.
Pasayten formation, Cretaceous, Washington, Smith and Calkins, 1.
Paso Robles formation, Neocene, California, Fairbanks, 7.
Paspotansa member or substage, Eocene, Maryland. Included in Aquia formation or stage. Clark and Martin, 1.
Patapsco, Cretaceous, Maryland, Clark and Bibbins, 1.
Patapsco formation, lower Cretaceous, Maryland, Shattuck, 5.
Patton shale, Carboniferous, Pennsylvania, Butts, 7.
Patton shale, Carboniferous, Pennsylvania, Butts, 4.
Patton shale lentil of the Pocono formation, Carboniferous, Pennsylvania, Campbell (M. R.), 18.
Patuxent formation, Cretaceous, Maryland, Clark and Bibbins, 1.
Patuxent formation, Jurassic?, Maryland, Shattuck, 5.
Patuxent formation, Cretaceous, Atlantic coast region, Clark (W. B.), 6.
Pawhuska limestone, Carboniferous, Indian Territory, Adams, Girty, and White, 1.
Pawnee Creek beds, Tertiary, Colorado, Matthew (W. D.), 2.
Pawnee limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Pawnee limestone, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Pawnee limestone, Carboniferous, Kansas, Beede and Rogers, 1.
Pawpaw formation, Cretaceous, Texas, Hill (R. T.), 3.
Paxton schist, Massachusetts, Perry and Emerson, 1.

Geologic formations described—Continued.
Payette formation, Tertiary, Idaho, Russell, 5.
Payette formation, Tertiary, Idaho, Lindgren and Drake, 2.
Payette formation, Oregon, Russell, 21.
Payne formation, Carboniferous, Oklahoma, Kirk, 1.
Peachbottom slates, Ordovician (?), Maryland, Mathews, 6.
Pegram limestone, Devonian, Kentucky and Tennessee, Foerste, 1.
Pella beds, included in St. Louis, Carboniferous, Iowa, Udden, 5.
Pella beds, included in St. Louis, Mississippian series, Iowa, Savage, 2.
Pelly gneisses, Alaska, Collier, 2.
Pelly gneiss, Archean (?), Alaska, Prindle, 2.
Pelona schist series, California, Hershey, 8.
Pendleton sandstone, Devonian, Indiana, Siebenthal, 2.
Pendleton sandstone, Devonian, Indiana, Hopkins (T. C.), 11.
Pennington shale, Carboniferous, Tennessee, Keith, 1.
Pennington shales, Carboniferous, Virginia, Stevenson (J. J.), 4.
Pensauken, Quaternary, New York, Veatch, 4.
Pensauken formation, Pleistocene, New Jersey, Salisbury, 1.
Pensauken formation, Quaternary, New Jersey, Merrill and others, 1.
Pensauken formation, Pleistocene, New Jersey, Kümmel and Knapp, 1.
Peorian soil, Quaternary, Ohio, Prosser, 10.
Perry formation, Devonian, Maine, Smith and Perry, 1.
Perry group, Devonian, Canada, Ells (R. W.), 17.
Pescadero sandstones, Miocene, California, Anderson (F. M.), 6.
Peshastin formation, pre-Tertiary, Washington, Smith (G. O.), 8, 13.
Petersburg formation, Carboniferous, Indiana, Fuller and Ashley, 1.
Petit Bourg series, West Indies, Spencer (J. W.), 2.
Phelps sandstone, Carboniferous, Missouri, Weller, 1.
Phelps sandstone, Carboniferous, Missouri, Adams (G. I.), 3.
Phoenix limestone lentil, Carboniferous, Utah, Keith, 13.
Picayune andesite, Colorado, Cross and Howe, 1.
Pierre shale, Cretaceous, Black Hills, Darton, 1, 8.
Pierre shale, Cretaceous, Colorado, Hills, 1.
Pierre formation, Cretaceous, North Dakota, Babcock, 2.
Pierre shales, Cretaceous, Colorado, Hatcher, 6.

Geologic formations described—Continued.
Pierre formation, Cretaceous, Nebraska, Barbour (E. H.), 8.
Pierre shale, Cretaceous, South Dakota, Todd (J. E.), 9–11, 15.
Pierre shale, Cretaceous, Black Hills region, Wyoming and Colorado, Darton, 16, 18.
Pierre shale, Cretaceous, South Dakota, Darton and Smith, 1.
Pierre shale, Cretaceous, South Dakota, Todd and Hall, 2, 3.
Pierre shale, Cretaceous, Wyoming, Darton, 14.
Pierre, Cretaceous, North Dakota, Leonard, 4.
Pierre formation, Cretaceous, Colorado, Fenneman, 10.
Pierre shales, Cretaceous, South Dakota, Reagan, 5.
Pierre shale, Cretaceous, Wyoming and South Dakota, Darton and O'Harra, 1.
Pierson limestone, Carboniferous, Missouri, Weller, 1.
Piketown gravels, Tertiary, Missouri, Marbut, 1.
Pilarcitos sandstone, California, Lawson (A. C.), 9.
Pinal schists, pre-Cambrian, Arizona, Ransome, 6, 10, 11, 13, 14.
Pinal schist, pre-Cambrian, Arizona, Lindgren, 28, 29.
Pine Hill quartzite, Silurian, Eckel, 6.
Pinkard formation, Cretaceous, Arizona, Lindgren, 28, 29.
Pinole tuffs, California, Lawson (A. C.), 9.
Pioneer shale, Cambrian (?), Arizona, Ransome, 13.
Pipestone beds, Tertiary, Montana, Douglass, 4.
Piqua limestone, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Piscataway member or substage, Eocene, Maryland, included in Aquia formation or stage, Clark and Martin, 1.
Pismo formation, Neocene, California, Fairbanks, 7.
Pit formation, Triassic, California, Diller, 12.
Pitkin limestone, Carboniferous, Arkansas, Adams (G. I.), 15.
Pitkin limestone, Carboniferous, Arkansas, Ulrich, 5.
Pitkin formation, Carboniferous, Indian Territory, Taff, 17.
Pitkin limestone, Mississippian, Arkansas, Adams and Ulrich, 1.
Pittsburg red shale, Carboniferous, West Virginia, White (I. C.), 7.
Pittsburg sandstone, Carboniferous, West Virginia, White (I. C.), 7.
Pittsburg limestone, Carboniferous, Ohio, Orton and Peppel, 1.

Geologic formations described—Continued.

Pittsburg limestone, Carboniferous, Maryland, Clark and Martin, 6.
Pittsburg limestone, Carboniferous, Pennsylvania, Clapp, 4.
Pittsburg limestone, Carboniferous, Pennsylvania, Stone (R. W.), 7, 8.
Pittsburg sandstone, Carboniferous, Pennsylvania, Stone (R. W.), 7, 8.
Pittsford shale, Ontaric, New York, Clarke, 20.
Pittsford shale, Silurian, New York, Hartnagel, 1.
Placita marl, Quaternary, New Mexico, Reagan, 1.
Platteville limestone, Ordovician, Illinois, Bain, 11.
Pleasonton beds, Carboniferous, Kansas, Wooster, 1, 2.
Plum Point marls, Miocene, Maryland, Shattuck, 10.
Pocahontas formation, Carboniferous, West Virginia, Campbell (M. R.), 5.
Pocono sandstone, Carboniferous, Maryland, Prosser, 3.
Pocono formation, Carboniferous, Maryland, Martin (G. C.), 1.
Pocono formation, Carboniferous, Pennsylvania, Fuller (M. L.), 3.
Pocono, Lower Carboniferous, Appalachian region, Stevenson (J. J.), 4.
Pocono sandstone, Carboniferous, Pennsylvania, Campbell (M. R.), 6, 8, 18.
Pocono formation, Carboniferous, Pennsylvania, Butts, 4, 6, 7.
Pocono formation, Carboniferous (Mississippian), Pennsylvania, Woolsey, 3.
Pocono formation, Carboniferous, Pennsylvania, Stone (R. W.), 6, 7.
Pogonip formation, Nevada, Spurr, 6.
Point Pleasant beds, Ordovician, Ohio, Nickles, 3.
Point Pleasant beds, Ordovician, Ohio, Foerste, 12.
Poison Canyon formation, Eocene(?), Colorado, Hills, 1.
Pokegama quartzite, included in Upper Huronian series, Algonkian, Minnesota, Leith, 4.
Polk Bayou limestone, Ordovician, Missouri, Adams (G. I.), 3.
Polk Bayou limestone, Ordovician, Arkansas, Adams (G. I.), 15.
Polk Bayou limestone, Ordovician, Arkansas, Ulrich, 5.
Portage formation, Devonian, New York, Luther, 2.
Portage sandstone, Devonian, New York, Clarke, 19, 20.
Portage sandstones, Devonian, New York, Luther, 1, 2.
Portage-Chemung formation, Devonian, Canada, Corkill, 2.
Port Clarence limestone, Ordovician, Alaska, Collier, 1, 8.

Geologic formations described—Continued.

Port Ewen limestone, Devonian, New York, Van Ingen and Clark, 1.
Port Ewen limestone, Devonic, New York, Clarke, 20.
Port Ewen (Kingston) beds, Devonian, New York, Grabau, 9.
Port Ewen beds, New York, Shimer, 5.
Port Hudson, Louisiana, Veatch, 2.
Port Hudson clays, Columbia, Tertiary, Louisiana, Clendenin, 1.
Port Hudson stage, Quaternary, Louisiana, Harris, 2.
Port Hudson clays, Recent, Texas, Hayes and Kennedy, 1.
Portland shale, Devonian, New York, Clarke, 19, 20.
Potapaco member or substage, Eocene, Maryland, included in Nanjemoy formation or stage, Clark and Martin, 1.
Poteau group, Carboniferous, Indian Territory and Arkansas, Taff, 4.
Potomac formation, Cretaceous, Atlantic coast region, Darton and Keith, 1.
Potomac formation, Cretaceous, Virginia-North Carolina, Darton, 7.
Potomac group, Cretaceous, Jurassic, Maryland, Shattuck, 5.
Potomac group, Jurassic and Cretaceous, Maryland, Clark and Bibbins, 2.
Potomac group, Maryland. Includes Patuxent, Arundel, Patapsco, and Raritan formations, Clark and Bibbins, 1.
Potomac group, Mesozoic, Maryland, Shattuck, 3.
Potomac group, Cretaceous, Atlantic coast region, Clark (W. B.), 6.
Potosi limestone, Cambrian, Missouri, Keyes, 6.
Potosi limestone, Cambrian, Missouri, Nason, 2.
Potosi series, Cross (W.), 1.
Potosi limestone, Cambrian, Missouri, Nason, 5.
Potosi series, Colorado, Purington, 3.
Potosi group, Cambrian and Ordovician, Missouri, Bain and Ulrich, 2.
Potosi volcanic series, Colorado, Cross and Howe, 1.
Potsdam formation, Cambrian, New York, Cushing, 2.
Potsdam group, Cambrian, Illinois, Alden, 1.
Potsdam sandstone, Cambrian, Canada, Ells, 8.
Potsdam sandstone, Cambrian, New York, Woodworth, 6.
Potsdam formation, Cambrian, Wisconsin, Weidman, 5.
Potsdam, Ordovician, Canada, Ells, 20.
Potsdam sandstone, Ordovician, Canada, Adams and LeRoy, 1.
Potsdam sandstone, Cambrian, New York, Cushing, 9, 10.

Geologic formations described—Continued.

Ripley formation, Cretaceous, Alabama, Smith (E. A.), 2.
Ripley formation, Cretaceous, Mississippi, Logan, 2.
Riversdale formation, Carboniferous, Canada, Ami, 40.
Roan gneiss, Archean, North Carolina, Keith, 4, 9, 12.
Roaring Creek sandstone (Upper Freeport sandstone), Carboniferous, West Virginia, White (I. C.), 7.
Rochester shale, Silurian, New York, Grabau, 1.
Rock Creek beds, Pleistocene, Texas, Gidley, 4.
Rockford limestone, Carboniferous, Indiana, Siebenthal, 2.
Rockford goniatite limestone, Carboniferous, Indiana, Newsom, 3.
Rockford goniatite limestone Mississippian, Indiana, Hopkins (T. C.), 11.
Rockmart slate, Silurian, Georgia, Hayes, 5.
Rockwood formation, Silurian, Tennessee, Keith, 1.
Rockwood formation, Silurian, Alabama and Georgia, Hayes, 5.
Rockwood formation, Cambrian, Tennessee, Keith, 11.
Rogersville shale, Cambrian, Tennessee, Keith, 1, 11.
Rome formation, Cambrian, Tennessee, Keith, 1, 11.
Rome formation, Cambrian, Alabama, Hayes, 5.
Romney formation, Devonian, Maryland, Prosser, 3.
Romney formation, Devonian, Maryland, Prosser, 12.
Roundout water lime, Silurian, New York, Grabau, 1.
Roundout beds, Silurian, New York. Van Ingen and Clark, 1.
Roundout formation, Silurian, New Jersey, Weller, 6.
Roundout formation, Silurian, New York, Hartnagel, 1.
Roundout waterlime, Ontaric, New York, Clarke, 20.
Roundout waterlime, Silurian, New York, Clarke and Luther, 3.
Rosamond series, Tertiary, California, Hershey, 10.
Rosebud beds, Miocene, South Dakota, Matthew and Gidley, 1.
Rosiclare member, Carboniferous (Mississippian), Illinois, Bain, 10.
Rosiclare sandstone, Mississippian, Kentucky, Ulrich, 8.
Roslyn formation, Tertiary, Washington, Smith (G. O.), 8, 13.
Ross limestone, subdivision of Linden bed, Devonian, Tennessee, Foerste, 7.
Roubidoux sandstone, Ordovician, Missouri, Gallaher, 1.
Roubidoux sandstone, Ordovician, Missouri, Adams (G. I.), 3.
Roubidoux formation, Cambrian and Ordovician, Missouri, Bain and Ulrich, 2.
Rove slate, included in Upper Huronian, Minnesota, Clements, 3.
Roxton beds, Cretaceous, Texas, Hill (R. T.), 3.
Ruin granite, pre-Cambrian, Arizona, Ransome, 6, 13.
Russell formation, Cambrian, Virginia, Watson (T. L.), 17.
Rustler formation, Permian, Texas, Richardson (G. B.), 4.
Rutledge limestone, Cambrian, Tennessee, Keith, 1, 11.
Rysedorph conglomerate, Champlainic, New York, Clarke, 20.
Sabine (Lignitic), Tertiary, Louisiana, Veatch, 7.
Sac limestone, Carboniferous, Missouri, Weller, 1.
Sac limestone, Carboniferous, Missouri, Adams (G. I.), 3.
Saccharoidal sandstone, Ordovician, Missouri, Adams (G. I.), 3.
Saccharoidal sandstone, Missouri, Broadhead, 8.
Sage Creek beds, Tertiary, Montana, Douglass, 8.
Saginaw, Carboniferous, Michigan, Lane, 4.
Saginaw formation, Carboniferous, Michigan, Russell, 6.
St. Clair limestone, Upper Silurian, Arkansas, Adams (G. I.), 3.
St. Clair limestone, Silurian, Arkansas, Ulrich, 5.
St. Clair marble, Silurian, Indian Territory, Taff, 17.
St. Croix sandstone, Iowa, Beyer and Williams, 2.
St. Elizabeth formation, Cambro-Ordovician, Missouri, Ball, 1.
St. Elizabeth formation, Ordovician, Missouri, Ball and Smith, 1.
St. Elizabeth formation, Cambro-Ordovician, Missouri, Van Horn, 1.
Ste. Genevieve sandstone, Carboniferous, Missouri, Gallaher, 1.
Ste. Genevieve limestone, Carboniferous (Mississippian), Illinois, Bain, 10.
Ste. Genevieve limestone, Mississippian, Mississippi Valley, Ulrich, 8.
St. Helena rhyolite, Tertiary, California, Osmont, 1.
St. Joe limestone member, Mississippian, Arkansas, Adams and Ulrich, 1.
St. Joe limestone, Carboniferous, Missouri, Gallaher, 1.
St. Joe limestone, Carboniferous, Arkansas, Adams (G. I.), 15.
St. Joe limestone, Carboniferous, Arkansas, Ulrich, 5.

Geologic formations described—Continued.
St. Joe limestone, Mississippian, Missouri, Gould, 12.
St. Joseph limestone, Cambrian, Missouri, Keyes, 6.
St. Joseph limestone, Cambrian, Missouri, Nason, 2, 5.
St. John beds, Devonian, New Brunswick, Matthew (G. F.), 4.
St. John terrane, Cambrian, Canada, Matthew (G. F.), 20.
St. Kitts gravels, West Indies, Spencer (J. W.), 4.
St. Louis, Carboniferous, Missouri, included in Mississippian series, Miller (B. L.), 1.
St. Louis, Mississippian series, Iowa, Leonard, 3.
St. Louis limestone, Mississippian series, Carboniferous, Iowa, Wilder, 3.
St. Louis limestone, Carboniferous, Kentucky, Ulrich and Smith, 1.
St. Louis limestone, Carboniferous, Missouri, Gallaher, 1.
St. Louis limestone, Carboniferous, Tennessee, Hayes and Ulrich, 1.
St. Louis stage, Mississippian series, Iowa, Beyer and Young, 1.
St. Louis limestone, Carboniferous, Iowa, Eckel and Bain, 1.
St. Louis limestone, Carboniferous, Iowa, Macbride, 4.
St. Louis limestone, Carboniferous (Mississippian), Illinois, Bain, 19.
St. Louis limestone, Mississippian, Mississippi Valley, Ulrich, 8.
St. Mary's formation, Miocene, Maryland, Clark (W. B.), 6.
St. Mary's formation, Miocene, Maryland, Shattuck, 10.
St. Peter group, Silurian, Illinois, Alden, 1.
St. Peter sandstone, Ordovician, Sardeson, 1.
St. Peter sandstone, Ordovician, Missouri, Gallaher, 1.
St. Peter sandstone, Ordovician, Ulrich, 5.
St. Peter sandstone, Wisconsin, Weidman, 5.
St. Peter sandstone, Ordovician, Illinois, Bain, 11.
St. Peter ("Crystal City") sandstone, Ordovician, Missouri, Bain and Ulrich, 2.
St. Peters (Pacific) sandstone, Cambro-Ordovician, Van Horn, 1.
St. Stephens limestone, Tertiary, Alabama, Smith (E. A.), 2, 3.
St. Thomas sandstone, Ordovician, Missouri, Gallaher, 1.
Salamanca conglomerate, Carbonic, New York, Clarke, 20.
Salamanca conglomerate lentil, included in Cattaraugus beds, Devonian, New York, Glenn, 1.

Geologic formations described—Continued.
Salem limestone, Carboniferous, Indiana, Cumings, 1.
Salina formation, Silurian, Maryland, Prosser, 3.
Salina, Silurian, New York, Van Ingen and Clark, 1.
Salina beds, Ontaric, New York, Clarke, 20.
Salina formation, Ontaric, Maryland, Schuchert, 7.
Salina formation, Silurian, New York, Sarle, 2.
Salina period, Silurian, New York, Schneider, 1.
Salmon formation, pre-Cretaceous, California, Hershey, 2.
Saltillo limestone, Cincinnati group, Ordovician, Tennessee, Foerste, 6.
Saline Creek cave-conglomerate, Carboniferous, Missouri, Ball, 1.
Saline Creek cave-conglomerate, Carboniferous, Missouri, Ball and Smith, 1.
Saline Creek cave-conglomerate, Pennsylvanian, Missouri, Van Horn, 1.
Salt Mountain limestone, Tertiary, Alabama, Maury, 1.
Saltsburg sandstone, member of Conemaugh formation, Carboniferous, Pennsylvania, Campbell (M. R.), 8, 18.
Saltsburg sandstone, Carboniferous, Pennsylvania, Butts, 4, 6, 7.
Saltsburg sandstone, Carboniferous, Pennsylvania, Richardson (G. B.), 3.
Saltsburg sandstone, Carboniferous, Maryland, Clark and Martin, 6.
Saltsburg sandstone, Carboniferous, Pennsylvania, Stone (R. W.), 7, 8.
Saltzburg sandstone, Carboniferous, West Virginia, White (I. C.), 7.
Saluda bed, Ordovician, Kentucky, Foerste, 3.
Saluda bed, Ordovician, Ohio, Prosser, 10.
Saluda beds, Ordovician, Kentucky, Nickles, 6.
San Carlos formation, Pleistocene, Panama, Hershey, 5.
Sandia series, Carboniferous, New Mexico, Herrick (C. L.), 3.
San Diego formation, Pliocene, California, Arnold, 2.
Sandusky limestone, Devonian, Ohio, Prosser, 10, 13.
San Emidio series, California, Hershey, 9.
San Francisco sandstone, California, Osmont, 1.
Sangamon soil, Quaternary, Ohio, Prosser, 10.
Sangamon, Pleistocene, Iowa, Udden, 2.
Sangamon deposits, Quaternary, Indiana and Illinois, Fuller and Clapp, 2.

Geologic formations described—Continued.
- San Joaquin clays, Tertiary, California, Anderson, 7.
- San Juan formation, Colorado, Cross (W.), 1.
- San Juan tuff, Tertiary volcanic, Colorado, Cross and Howe, 1.
- San Juan breccias, Colorado, Purington, 3.
- Sankaty beds, Quaternary, New York, Veatch, 4.
- Sankaty beds, Quaternary, Massachusetts, Fuller, 29.
- San Luis formation, Juratrias ?, California, Fairbanks, 7.
- San Miguel cherts, California, Lawson (A. C.), 9.
- San Pablo, California, Lawson (A. C.), 9.
- San Pablo, California, Osmont, 1.
- San Pedran epoch, Quaternary, California, Hershey, 14.
- San Pedro series, Pleistocene, California, Arnold and Arnold, 1.
- San Pedro series, Pleistocene, California, Arnold, 2.
- Santa Claran epoch, Quaternary, California, Hershey, 14.
- Sante Fé marl group, Tertiary, New Mexico, Johnson (D. W.), 4.
- Sante Fé schists, Cuba, Hayes, Vaughan, and Spencer, 1.
- Santa Margarita formation, Neocene, California, Fairbanks, 7.
- Santo Domingo rhyolite, Mexico, Hill (R. T.), 15.
- Saracachi formation, Mexico, Hill (R. T.), 15.
- Saranac formation, New York, Cushing, 10.
- Saratoga formation, Cretaceous, Arkansas, Taff, 5.
- Saratogian, Cambric, New York, Clarke, 20.
- Saratogian, proposed for Upper Cambrian, Walcott, 8.
- Saugus division, Pliocene, Tertiary, California, Hershey, 10.
- Sausalito cherts, California, Lawson (A. C.), 9.
- Savanna sandstone, Carboniferous, Indian Territory, Taff, 2–4.
- Saxicava sand, Canada, Coleman, 5.
- Scanlan conglomerate, Cambrian ?, Arizona, Ransome, 13.
- Schultze granite, pre-Cambrian, Arizona, Ransome, 6, 13.
- Schunnemunk conglomerate, Devonian, New York, Eckel, 6.
- Seaforth limestone, West Indies, Spencer (J. W.), 1.
- Secret Canyon shale, Nevada, Spurr, 6.
- Seeley slate, pre-Cambrian, Wisconsin, Weidman, 5.
- Sellersburg beds, Devonian, Indiana, Kindle, 1.

Geologic formations described—Continued.
- Sellersburg limestone, Devonian, Indiana, Siebenthal, 2.
- Sellersburg limestone, included in Hamilton, Devonian, Indiana, Newsom, 3.
- Sellersburg limestone, Devonian, Indiana, Hopkins (T. C.), 11.
- Seminole conglomerate, Carboniferous, Indian Territory, Taff, 2.
- Selma chalk, Cretaceous, Alabama, Smith (E. A.), 2, 3.
- Selma chalk (Rotten limestone), Cretaceous, Mississippi, Logan, 2.
- Seneca group, Devonian, New York, Schneider, 1.
- Senecan, Devonic, New York, Clarke, 20.
- Senora formation, Carboniferous, Indian Territory, Taff, 2.
- Setters quartzite, Maryland, Mathews and Miller, 1.
- Setters quartzite, Cambrian, Maryland, Mathews, 6.
- Severy shales, Carboniferous, Kansas, Beede, 6.
- Severy shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
- Sevier shale, Ordovician, Tennessee, Keith, 1, 11.
- Sewell formation, Carboniferous, West Virginia, Campbell (M. R.), 2, 5.
- Sewickley limestone, Carboniferous, West Virginia, White (I. C.), 7.
- Sewickley sandstone, Carboniferous, West Virginia, White (I. C.), 7.
- Sewickley limestone, Carboniferous, Maryland, Clark and Martin, 6.
- Sewickley limestone, Carboniferous, Pennsylvania, Clapp, 4.
- Sewickley sandstone, Carboniferous, Maryland, Clark and Martin, 6.
- Shady limestone, Cambrian, Tennessee, Keith, 4, 9, 11.
- Shady marble, Cambrian, North Carolina, Keith, 12.
- Shaffer shale, Devonic, New York, Clarke, 20.
- Shafter beds, Cretaceous, Texas, Udden (Johan A.), 11.
- Shakopee dolomite, Ordovician, Illinois, Bain, 11.
- Sharon conglomerate, Carboniferous, Ohio, Prosser, 10.
- Sharon conglomerate, member of Pottsville formation, Carboniferous, Pennsylvania, Fuller and Alden, 1, 2.
- Sharpsville sandstone, Carboniferous, Pennsylvania, Stevenson (J. J.), 4.
- Sharon sandstone, Carboniferous, Maryland, Clark and Martin, 6.
- Shasto-Chico, California, Lawson (A. C.), 9.
- Shasta-Chico series, Cretaceous, California, Lawson and Palache, 1.
- Shasta-Chico series, Cretaceous, California, Osmont, 1.

Geologic formations described—Continued.
Shawangunk conglomerate, Silurian, New Jersey, Weller, 6.
Shawangunk grit and conglomerate, Silurian, New York, Hartnagel, 2.
Shell Bluff group, Tertiary, Georgia, Maury, 1.
Shell Bluff group, Tertiary, Florida, Dall, 8.
Shenandoah limestone, Cambro-Ordovician, Virginia, Watson (T. L.), 17.
Shenandoah limestone, Ordovician, Virginia, Bassler, 4.
Shenango sandstone, Carboniferous, Pennsylvania, Stevenson (J. J.), 4.
Sheppard quartzite, Algonkian, Montana, Willis, 6.
Sherburne flags, Devonian, New York, Clarke and Luther, 3.
Sherburne sandstone, Devonic, New York, Clarke, 20.
Sheridan (Equus) beds, Pleistocene, Texas, Gidley, 4.
Sherwood limestone, Cambrian, Virginia, Campbell (H. D.), 1.
Shiloh marl, Tertiary, New Jersey, Kümmel and Knapp, 1.
Shimer gypsum, Permian, Oklahoma, Gould, 9.
Shimer gypsum member, Carboniferous (Permian), Oklahoma, Gould, 14.
Shinarump, Triassic, Arizona, Ward, 1.
Shinarump conglomerate, Utah, Huntington and Goldthwait, 1.
Shinarump, Utah, Huntington and Goldthwait, 2.
Shinarump formation, Triassic, Arizona, Ward (L. F.), 5.
Shumla sandstone, Devonic, New York, Clarke, 20.
Sierran, Hershey, 8.
Siestan formation, California, Lawson and Palache, 1.
Silo sandstone, Cretaceous, Indian Territory, Taff, 3, 6.
Silver Creek shale, Devonian, New York, Clarke, 19.
Silver Creek limestone, Devonian, Indiana, Siebenthal, 2.
Silver Creek hydraulic limestone, included in Hamilton, Devonian, Indiana, Newsom, 3.
Silver Creek hydraulic limestone, Devonian, Indiana, Hopkins (T. C.), 11.
Silverton series, Colorado, Purington, 3.
Silverton series, Colorado, Cross (W.), 1.
Silverton volcanic series, Colorado, Cross and Howe, 1.
Simpson formation, Ordovician, Indian Territory, Taff, 3, 6, 13.
Sioux quartzite, Algonkian, South Dakota, Todd (J. E.), 9–11.
Sioux quartzite, Algonkian, South Dakota, Todd and Hall, 1.
Siyeh limestone, Algonkian, Montana, Willis, 6.
Skajit formation, Upper Silurian, Alaska, Schrader, 1, 3.
Skaneateles shale, Devonic, New York, Clarke, 20.
Skaneateles shale, Devonian, New York, Clarke and Luther, 1, 3.
Skunnemunk conglomerate, Devonian, New Jersey, Kümmel and Weller, 2.
Skunnemunk conglomerate, Devonian, New Jersey, Weller, 6.
Slocan series, British Columbia, Corless, 2.
Smith or Deep River beds, Miocene, Montana, Douglass, 1.
Snowbank granite, Algonkian, Minnesota, Clements, 3.
Snowbird formation, Cambrian, North Carolina and Tennessee, Keith, 9, 11.
Snyder Creek shales, Devonian, Missouri, Gallaher, 1.
Soledad division, Pliocene, Tertiary, California, Hershey, 10.
Solitude granite, pre-Cambrian, Arizona, Ransome, 6, 13.
Somerville formation, Carboniferous, Indiana, Fuller and Ashley, 1.
Somerville formation, Carboniferous, Indiana, Fuller and Clapp, 2.
Sonoma tuff, Tertiary, California, Osmont, 1.
Soudan formation, Archean, Minnesota, Clements, 3.
South Bosque marl, Cretaceous, Texas, Prather, 2.
Spearfish formation, Triassic, Black Hills, Darton, 1, 8.
Spearfish, South Dakota, Richardson (G. B.), 2.
Spearfish sandstone, Triassic?, Wyoming, Smith (W. S. T.), 1.
Spearfish formation, Triassic?, Black Hills region and Wyoming, Darton, 16, 18.
Spearfish formation, Triassic?, Wyoming and South Dakota, Darton, 14.
Spearfish shale, Triassic?, South Dakota, Darton and Smith, 1.
Spearfish formation, Triassic?, Wyoming and South Dakota, Darton, 26.
Spearfish formation, Triassic?, Wyoming and South Dakota, Darton and O'Harra, 1.
Spergen limestone, Mississippian, Mississippi Valley, Ulrich, 8.
Spring Creek limestone, Carboniferous, Arkansas, Ulrich, 5.
Springfield limestone, Silurian, Ohio, Prosser, 10.
Springvale beds, included in St. Louis, Carboniferous, Iowa, Udden, 5.
Springvale beds, included in St. Louis, Mississippian series, Iowa, Savage, 2.
Squaw sandstone, Devonian, West Virginia, Stevenson (J. J.), 4.
Stafford limestone, Devonian, New York, Clarke, 2.

Geologic formations described—Continued.
Stafford limestone, Devonian, New York, Wood (Elvira), 1.
Stafford limestone, Devonian, New York, Talbot, 1.
Stafford limestone, Devonian, New York, Clarke and Luther, 1.
Standish flags and shales, Devonian, New York, Clarke and Luther, 1.
Standley shale, Silurian, Indian Territory, Taff, 3.
Stanton limestone, Carboniferous, Kansas, Adams, Girty and White, 1.
Star Peak formation, Nevada, Spurr, 6.
Starmount limestones, Cambrian, Montana, Weed, 5.
Stepovak series, Eocene, Alaska, Palache, 3.
Stewart shale, Carboniferous, Indian Territory, Taff, 2.
Stockbridge dolomite, Silurian, New York, Merrill and others, 1.
Stockbridge limestone, Cambro-Silurian, New York, Eckel, 6.
Stockbridge limestone, New York, Eckel, 30.
Stockton, included in Newark, New Jersey, Knapp (G. N.), 1.
Stonehouse formation, Silurian, Canada, Ami, 10.
Stones River stage, Ordovician, Pennsylvania, Collie, 3.
Stones River series, Ordovician, Kentucky, Miller (A. M.), 4.
Stony Mountain formation, Ordovician, Canada, Dowling, 1.
Stormville sandstone, Devonian, New Jersey, Weller, 6.
Strawn division, Carboniferous, Texas, Taff, 4.
Stringtown shale, Silurian, Indian Territory, Taff, 3.
Strong City beds, Carboniferous, Kansas, Wooster, 1, 2.
Sturgeon quartzite, Algonkian, Michigan, Bayley, 1.
Stuver series, pre-Devonian, Alaska, Schrader, 1, 3.
Styliola or Genundewa limestone, Devonian, New York, Luther, 2.
Sub-Blairsville shale, member of the Chemung formation, Devonian, Pennsylvania, Campbell (M. R.), 18.
Summerhill sandstone, Carboniferous, Pennsylvania, Butts, 7.
Sumner stage, Carboniferous, Kansas, Prosser, 7.
Sunbury shale, Carboniferous, Ohio, Prosser, 1, 6, 10.
Sunbury shale, Carboniferous, Ohio, Prosser and Cumings, 1.
Sundance formation, Jurassic, Black Hills, Darton, 1, 8.
Sundance formation, Jurassic, Wyoming, Smith (W. S. T.), 1.

Geologic formations described—Continued.
Sundance formation, Jurassic, Black Hills region, Wyoming and Colorado, Darton, 16.
Sundance formation, Jurassic, South Dakota, Darton and Smith, 1.
Sundance formation, Jurassic, Wyoming and South Dakota, Darton, 14.
Sundance formation, Jurassic, Black Hills region and Wyoming, Darton, 18.
Sundance formation, Jurassic, Wyoming, Darton, 26.
Sundance formation, Jurassic, Wyoming and South Dakota, Darton and O'Harra, 1.
Sunderland formation, Quaternary, Maryland, Shattuck, 5.
Sunderland formation, Pleistocene, Atlantic coast region, Clark (W. B.), 6.
Swan Creek limestone, Cincinnati group, Ordovician, Tennessee, Foerste, 6.
Swauk formation, Tertiary, Washington, Smith (G. O.), 8, 13.
Swauk formation, Tertiary, Washington, Smith and Calkins, 1.
Swift Water series, Silurian, New Hampshire, Hitchcock (C. H.), 10.
Sycamore sands, Cretaceous, Texas, Hill (R. T.), 3.
Sycamore limestone, Carboniferous, Indian Territory, Taff, 6, 13.
Sylamore sandstone, Carboniferous, Arkansas, Adams (G. I.), 3.
Sylamore formation, Devonian, Arkansas, Adams (G. I.), 15.
Sylamore formation, Devonian, Arkansas, Ulrich, 5.
Sylamore sandstone, Devonian, Indian Territory, Taff, 17.
Sylamore sandstone member, Devonian, Arkansas, Adams and Ulrich, 1.
Sylvan shale, Silurian, Indian Territory, Taff, 3, 6, 13.
Sylvania sandstone, Silurian, Ohio, Prosser, 10.
Syracuse salt, Ontaric, New York, Clarke, 20.
Taconic, New York, Clarke, 20.
Tahkandit series, Permian, Alaska, Collier, 2.
Talbot formation, Pleistocene, Atlantic coast region, Clark (W. B.), 6.
Talbot formation, Quaternary, Maryland, Shattuck, 5.
Tallhina chert, Silurian, Indian Territory, Taff, 3.
Tampa limestone, or Orbitolite bed, Tertiary, Florida, Dall, 8.
Tampa silex beds, Tertiary, Florida, Dall, 8.
Tampa limestone, Tertiary, Florida, Maury, 1.
Tanana schists, pre-Silurian, Alaska, Mendenhall, 8.

Geologic formations described—Continued.
- Taneum andesite, Tertiary, Washington, Smith (G. O.), 13.
- Taylor formation, Cretaceous, Texas, Hill (R. T.), 3.
- Taylor marl, Cretaceous, Texas, Hill and Vaughan, 1.
- Teanaway basalt, Tertiary, Washington, Smith (G. O.), 8, 13.
- Teay formation, Pleistocene, West Virginia, Campbell (M. R.), 2.
- Tecumseh shales, Carboniferous, Kansas, Beede, 6.
- Tecumseh shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
- Tejon, California, Lawson (A. C.), 9.
- Tejon, Tertiary, California, Osmont, 1.
- Tellico sandstone, Ordovician, Tennessee, Keith, 1, 11.
- Telluride conglomerate, Tertiary, Colorado, Cross and Howe, 1, 3.
- Temblor beds, Tertiary, California, Anderson, 7.
- Tensleep sandstone, Carboniferous, Wyoming, Darton, 16, 18.
- Tetelna volcanics, Upper Paleozoic, Alaska, Mendenhall, 8.
- Thessalon series, Canada, Van Hise and others, 1.
- Thetis group, Mesozoic, Alaska, Collier, 12.
- Thompson Creek beds, Tertiary, Montana, Douglass, 4.
- Thoroughfare volcanics, Maine, Smith (G. O.), 2.
- Thurman sandstone, Carboniferous, Indian Territory, Taff, 2.
- Thurmond formation, Carboniferous, West Virginia, Campbell, 5.
- Tichenor limestone, Devonic, New York, Clarke, 20.
- Tichenor limestone, Devonian, New York, Clarke and Luther, 1.
- Tieton andesite, Quaternary, Washington, Smith (G. O.), 7.
- Tilden limestone lentil, Carboniferous, Utah, Keith, 13.
- Timpas formation, Cretaceous, Colorado, Hills, 1.
- Tinton beds, Cretaceous, New Jersey, Weller, 7.
- Tisbury sands, referred to Iowan glacial stage, Fuller (M. L.), 40.
- Tishomingo granite, pre-Cambrian, Indian Territory, Taff, 3, 6.
- Tombstone beds, Carboniferous, Arizona, Church, 1.
- Tonto formation, Arizona, Reagan, 3.
- Tonto shale and sandstone, Nevada, Spurr, 6.
- Torio limestone, Panama, Hershey, 5.
- Toro formation, Cretaceous, California, Fairbanks, 7.
- Totsen series, Silurian, Alaska, Schrader, 1, 3.
- Toughnut quartzite, Arizona, Church, 1.

Geologic formations described—Continued.
- Toughnut series, Arizona, Blake (W. P.), 8.
- Traders member of Vulcan formation, Algonkian, Michigan, Bayley, 1.
- Traverse group, Devonian, Michigan, Grabau, 2, 5.
- Traverse group, Devonian, Michigan, Russell, 6.
- Traverse series, Upper Devonian, Michigan. Exact synonym, Thunder Bay series, Grabau, 5.
- Travis Peak formation, Cretaceous, Texas, Hill (R. T.), 3.
- Travis Peak formation, Cretaceous, Texas, Hill and Vaughan, 1.
- Trenton limestone, Ordovician, New Jersey, Kümmel and Weller, 1.
- Trenton limestone, Ordovician, New Jersey, Weller, 3.
- Trenton, Silurian, Illinois, Alden, 1.
- Trenton formation, Ordovician, Ohio, Nickles, 3.
- Trenton limestone, Ordovician, Canada, Ells (R. W.), 7, 8.
- Trenton limestone, Ordovician, Ohio, Bownocker, 3, 5.
- Trenton limestone, Ordovician, Vermont, Perkins, 7, 11.
- Trenton limestone, Champlainic, New York, Clarke, 20.
- Trenton limestone, Ordovician, Missouri, Gallaher, 1.
- Trenton limestone, Ordovician, New Jersey, Weller, 6.
- Trenton limestone, Ordovician, Ohio, Prosser, 10.
- Trenton stage, Ordovician, Pennsylvania, Collie, 3.
- Trenton, Ordovician, Indiana, Foerste, 11.
- Trenton clays, Cretaceous, New Jersey, Kümmel and Knapp, 1.
- Trenton limestone, Ordovician, Alabama, Smith (E. A.), 3.
- Trenton, Ordovician, Kentucky, Miller (A. M.), 4.
- Trenton formation, Ordovician, New York, Cushing, 10.
- Trenton group, Ordovician, Canada, Adams and Le Roy, 1.
- Trenton limestone, Ordovician, Canada, Ells (R. W.), 20.
- Trenton limestone, Ordovician, Michigan, Russell, 23.
- Trenton limestone, Ordovician, New York, Cushing, 9.
- Trenton limestone, Ordovician, New York, Ogilvie, 6.
- Tribune limestone, Carboniferous (Mississippian), Illinois, Bain, 19.
- Tribune limestone, Mississippian, Mississippi Valley, Ulrich, 8.
- Trincheras division, Tertiary, Arizona, Dumble, 7.
- Trinidad sandstone, Cretaceous, Colorado, Hills, 1.

Geologic formations described—Continued.

Trinity division, Cretaceous, Texas, Hill (R. T.), 3.
Trinity sand, Cretaceous, Arkansas, Taff, 5.
Trinity sandstone, Cretaceous, Indian Territory, Taff, 3, 6.
Truckee formation, Nevada, Spurr, 6.
Truckee beds, Nevada, Louderback, 4.
Tulare formation, Tertiary, California, Anderson, 7.
Tularosa formation, New Mexico, Herrick (C. L.), 6.
Tule Spring limestone, Carboniferous, Arizona, Lindgren, 28, 29.
Tullahoma formation, Carboniferous, Tennessee, Hayes and Ulrich, 1.
Tullahoma formation, Carboniferous (Mississippian), Illinois, Bain, 19.
Tullahoma formation, Mississippian, Mississippi Valley, Ulrich, 8.
Tully limestone, Devonian, New York, Claypole, 5.
Tully limestone, Devonian, New York, Loomis, 4.
Tully limestone, Devonian, New York, Schneider, 1.
Tully limestone, Devonic, New York, Clarke, 20.
Tully limestone, Devonian, New York, Clarke and Luther, 1, 3.
Turnley hornstones (Spokane shale?), Algonkian, Montana, Weed, 5.
Tuscaloosa formation, Cretaceous, Alabama, Smith (E. A.), 2.
Tuscan tuff, California, Anderson (F. M.), 2.
Tuscarora formation, Silurian, Maryland, Prosser, 3.
Tuscumbia, Carboniferous, Alabama, Stevenson (J. J.), 4.
Twelvemile beds, Tertiary, Alaska, Collier, 2.
Tymochtee member (?), Silurian, Ohio, Prosser, 10.
Tyner formation, Ordovician, Indian Territory, Taff, 17.
Tyrone beds, Ordovician, Kentucky, Miller (A. M.), 4.
Uffington shale, Carboniferous, West Virginia, White (I. C.), 7.
Ulsterian, Devonic, New York, Clarke, 20.
Unadilla formation, Devonian, New York, Prosser, 11.
Uncompahgre formation, Algonkian, Colorado, Cross (W.), 7.
Uncompahgre formation, Algonkian, Colorado, Cross and Howe, 1, 3.
Unicoi formation, Cambrian, North Carolina and Tennessee, Keith, 4.
Union shale, Devonian, Montana, Weed, 5.
Union formation, Carboniferous, Canada, Ami, 40.
Uniontown sandstone, Carboniferous, Maryland, Clark and Martin, 6

Geologic formations described—Continued.

Unkar formation, Nevada, Spurr, 6.
Unkpapa sandstone, Jurassic, Black Hills, Darton, 1, 8, 16, 18.
Unkpapa sandstone, Jurassic, South Dakota, Darton and Smith, 1.
Ute limestone, Silurian, Utah and Nevada, Berkey, 8.
Utica, Ordovician, Vermont, Perkins, 7, 11.
Utica group, Ordovician, Ohio and Indiana, Nickles, 3.
Utica shale, Ordovician, Canada, Ells (R. W.), 7, 8.
Utica formation, Ordovician, Canada, Nolan and Dixon, 1.
Utica shale, Ordovician, Ohio, Prosser, 10.
Utica stage, Ordovician, Pennsylvania, Collie, 3.
Utica formation, Ordovician, Indiana, Foerste, 11.
Utica formation, Cambro-Silurian, Canada, Corkill, 2.
Utica formation, Ordovician, Michigan, Russell, 23.
Utica formation, Ordovician, New York, Cushing, 9, 10.
Utica shale, Ordovician, Canada, Adams and Le Roy, 1.
Utica shale, Ordovician, Canada, Ells (R. W.), 20.
Uvalde formation, Neocene, Tertiary, Texas, Hill and Vaughan, 1.
Valdes series, Silurian?, Alaska, Schrader and Spencer, 1.
Valdez formation, Silurian, Alaska, Mendenhall, 8.
Vallecito conglomerate, Algonkian, Colorado, Cross and Howe, 3.
Vallenar series, Upper Paleozoic?, Alaska, Brooks, 4.
Vancouver series, Triassic, Canada, Haycock, 3.
Vancouver series, Triassic, Canada, Webster, 1.
Vancouver series, Triassic and Jurassic, Alaska, Emerson (B. K.), 6.
Van Horn formation, Cambrian, Texas, Richardson (G. B.), 4.
Vanport limestone, Carboniferous, West Virginia, White (I. C.), 7.
Vanport or Ferriferous limestone, Carboniferous, Maryland, Clark and Martin, 6.
Vanport limestone, Carboniferous, Pennsylvania, Clapp, 4.
Vanport limestone, Carboniferous, Pennsylvania, Stone, 8.
Vanport limestone, Carboniferous, Pennsylvania, Woolsey, 3.
Vanport limestone lentil, Carboniferous, Pennsylvania, Stone (R. W.), 7.
Vanport limestone, Carboniferous, Pennsylvania, Butts, 4, 6.
Vaquero sandstone, Miocene, Tertiary, California, Haehl and Arnold, 1.

Geologic formations described—Continued.
Vaquero sandstone, Neocene, California, Fairbanks, 7.
Venango, Devonian, Pennsylvania, Stevenson (J. J.), 4.
Verdi beds, included in St. Louis, Mississippian series, Iowa, Savage, 2.
Verdi beds, Upper and Lower, included in St. Louis, Carboniferous, Iowa, Udden, 5.
Verkin, Upper and Lower, Permian, Utah, Huntington and Goldthwait, 1.
Vernon shale, Ontaric, New York, Clarke, 20.
Versailles beds, Ordovician, Kentucky, Nickles, 6.
Versailles bed, Ordovician, Ohio, Indiana, and Kentucky, Foerste, 12.
Vicksburg group, Tertiary, Louisiana, Lerch, 2.
Vicksburg stage, included in Oligocene, Tertiary, Louisiana, Harris, 2.
Vicksburg limestone, Tertiary, Florida, Dall, 8.
Vicksburg stage, Tertiary, Mississippi, Casey, 2.
Vicksburg limestone, Tertiary, Gulf region, Maury, 1.
Vilas shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Vilas shale, Carboniferous, Kansas, Adams, Haworth, and Crane, 1.
Vinal Haven acid volcanics, Maine, Smith (G. O.), 2.
Vinita beds, Triassic, Virginia, Woodworth, 4.
Viola limestone, Ordovician, Indian Territory, Taff, 3, 6.
Viola limestone, Ordovician, Indian Territory and Oklahoma, Taff, 13.
Viola limestone, Ordovician, Oklahoma, Gould, 13, 14.
Virginia slate, included in Upper Huronian series, Algonkian, Minnesota, Leith, 4.
Vola limestone, Cretaceous, Texas, Dumble, 12.
Vulcan formation, Algonkian, Michigan, Bayley, 1.
Wabash group, Carboniferous, Illinois, Indiana, Ashley, 1.
Wabash formation, Carboniferous, Indiana, Fuller and Clapp, 2.
Wabaunsee stage, Carboniferous, Kansas, Prosser, 7.
Walden sandstone, Carboniferous, Georgia, McCallie, 9.
Waldrip division, Carboniferous, Texas, Hill (R. T.), 3.
Waldron shaly clay, Silurian, Tennessee, Foerste, 7.
Waldron clay, Silurian, Indiana, Foerste, 11.
Wales series, Lower Paleozoic?, Alaska, Brooks, 4.
Walnut clay, Cretaceous, Texas, Hill and Vaughan, 1.

Geologic formations described—Continued.
Walnut formation, Cretaceous, Texas, Hill (R. T.), 3.
Wapanucka limestone, Carboniferous, Indian Territory, Taff, 2, 3, 13.
Wappinger limestone, Champlainic, New York, Clarke, 20.
Wapsipinicon stage, Devonian, Iowa, Calvin, 10.
Wapsipinicon formation, Devonian, Iowa, Eckel and Bain, 1.
Wapsipinicon stage, Devonian, Iowa, Savage, 8.
Warren beds, Ordovician, Ohio and Indiana, Nickles, 3.
Warren bed, Cincinnati series, Ordovician, Foerste, 8, 11.
Warren limestone, Cincinnati group, Ordovician, Tennessee, Foerste, 6.
Wasatch limestone, Nevada, Spurr, 6.
Wasatch limestone, Carboniferous, Utah and Nevada, Berkey, 8.
Washington serpentine marbles, Lyon, 1.
Washington beds, Cretaceous, Texas, Hill (R. T.), 3.
Washington limestone, Ordovician, Vermont, Richardson (C. H.), 2.
Washington limestone, Carboniferous, West Virginia, White (I. C.), 7.
Washington stage, Carboniferous, West Virginia, White (I. C.), 7.
Washington shale and sandstone, Carboniferous, Arkansas, Ulrich, 5.
Washington limestone, Carboniferous, Maryland, Clark and Martin, 6.
Washington formation, Carboniferous, Pennsylvania, Stone (R. W.), 6.
Washington (upper) limestone, Carboniferous, Pennsylvania, Clapp, 4.
Washita limestone, Cretaceous, Texas, Dumble, 12.
Washita division, Cretaceous, Texas, Hill (R. T.), 3.
Washita group, Cretaceous, Texas, Richardson (G. B.), 4.
Watauga shale, Cambrian, Tennessee, Keith, 4, 9.
Watchung basalt, Juratrias, New Jersey, Merrill and others, 1.
Waverley series, Carboniferous, Ohio, Prosser, 1.
Waverly, Carboniferous, Ohio and Kentucky, Stevenson (J. J.), 4.
Waverly series, Carboniferous, Ohio, Prosser and Cumings, 1.
Waynesburg sandstone, Carboniferous, West Virginia, White (I. C.), 7.
Waynesburg sandstone, member of Dunkard formation, Carboniferous, Pennsylvania, Campbell (M. R.), 8.
Waynesburg limestone, Carboniferous, Maryland, Clark and Martin, 6.
Waynesburg limestone, Carboniferous, Pennsylvania, Clapp, 4.
Waynesburg limestone, Carboniferous, Pennsylvania, Stone (R. W.), 6.

Geologic formations described—Continued.
Waynesburg sandstone, Carboniferous, Maryland, Clark and Martin, 6.
Waynesville beds, Ordovician, Ohio and Indiana, Nickles, 5.
Waynesville beds, Ordovician, Kentucky, Nickles, 6.
Waynesville beds, Ordovician, Indiana, Foerste, 11.
Wawa tuffs, Huronian, Canada, Coleman and Willmott, 1, 2.
Webberville formation, Cretaceous, Texas, Hill (R. T.), 3.
Webberville formation, Cretaceous, Texas, Hill and Vaughan, 1.
Weber conglomerate, Nevada and California, Spurr, 6.
Weber quartzite, Carboniferous, Utah and Nevada, Berkey, 8.
Wedington sandstone, Carboniferous, Arkansas, Adams (G. I.), 15.
Wedington sandstone, Carboniferous, Arkansas, Ulrich, 5.
Wedington sandstone member, Carboniferous, Indian Territory, Taff, 17.
Wedington sandstone member, Mississippian, Arkansas, Adams and Ulrich, 1.
Weisner quartzite, Cambrian, Georgia, Watson (T. L.), 10, 11.
Weisner quartzite, Cambrian, Alabama and Georgia, Hayes (C. W.), 5.
Wellington formation, Permian, Oklahoma, Gould, 6.
Wellington shales, Carboniferous, Kansas, Adams, Girty, and White, 1.
Wellington shales, Carboniferous, Kansas, Prosser, 7.
Wellington beds, Carboniferous, Kansas, Wooster, 1, 2.
Wenas basalt, Miocene, Tertiary, Washington, Smith (G. O.), 7.
Weno subgroup, Cretaceous, Texas, Hill (R. T.), 3.
Wenonah sand, Cretaceous, New Jersey, Kümmel and Knapp, 1.
West Fork series, Alaska, Schrader and Spencer, 1.
Westhill flags, Devonic, New York, Clarke, 20.
West Hill sands, Devonian, New York, Clarke, 19.
West Hill flags and shale, Devonian, New York, Clarke and Luther, 1, 2.
Weston limestone, Carboniferous, Missouri, Gallaher, 1.
West River shale, Devonian, New York, Clarke and Luther, 1, 2.
West Union limestone, Silurian, Ohio, Prosser, 10.
Wetumka shale, Carboniferous, Indian Territory, Taff, 2.
Wewoka formation, Carboniferous, Indian Territory, Taff, 2.
Whalen group, Algonkian, Wyoming, Smith (W. S. T.), 1.

Geologic formations described—Continued.
White limestone, Tertiary, Alabama, Maury, 1.
Whitecliffs formation, Cretaceous, Arkansas, Taff, 5.
Whiteface anorthosite, New York, Cushing, 10.
Whitehorse sandstone member, Carboniferous (Permian), Oklahoma, Gould, 14.
White Pine shale, Nevada, Spurr, 6.
White River group, Tertiary, Black Hills, Darton, 1.
White River formation, Tertiary, Colorado, Matthew (W. D.), 3.
White River formation, Tertiary, Montana, Douglass, 4.
White River formation, Tertiary, Montana, Douglass, 8.
White River group, Tertiary, Black Hills region, Darton, 18.
White River series, Tertiary, Great Plains region, Hatcher, 11.
White River beds, Miocene, Montana, Douglass, 1.
White River formation, Tertiary, Black Hills region, Jaggar, 5.
Whitetail formation, Tertiary, Arizona, Ransome, 6, 13.
Whitewater beds, included in Richmond group, Ordovician, Ohio and Indiana, Nickles, 5.
Whitewood limestone, Ordovician, Black Hills region, Darton, 16, 18.
Whitewood limestone, Ordovician, Black Hills region, Jaggar, 5.
Whitewood limestone, Ordovician, Wyoming, Darton and O'Harra, 1.
Whitewood limestone, Ordovician, Wyoming and South Dakota, Darton, 26.
Wichita formation, Carboniferous, Texas, Hill (R. T.), 3.
Wichita beds, Permian, Texas, Broili, 2.
Wicomico formation, Pleistocene, Atlantic coast region, Clark (W. B.), 6.
Wicomico formation, Quaternary, Maryland, Shattuck, 5.
Wilbur limestone, Ontaric, New York, Clarke, 20.
Wilbur limestone, Silurian, New York, Hartnagel, 1.
Wilbur limestone, Silurian, New York, Van Ingen and Clark, 1.
Willard shales, Carboniferous, Kansas, Beede, 6.
Willow Spring granite, Arizona, Ransome, 6, 13.
Wills Creek formation, Silurian, Maryland, Uhler, 1.
Wills Point clays, Eocene, Tertiary, Texas, Hayes and Kennedy, 1.
Wilmore sandstone, Carboniferous, Pennsylvania, Butts, 7.
Wilson Ranch beds, Tertiary, California, Osmont, 1.
Winchester bed, Ordovician, Kentucky, Miller (A. M.), 4.

Geologic formations described—Continued.
Winchester group, Ordovician, Kentucky, Nickles, 6.
Windy Gap limestone, Carboniferous, West Virginia, White (I. C.), 7.
Winfield formation, Carboniferous, Kansas, Adams, Girty, and White, 1.
Winfield formation Carboniferous, Kansas, Prosser, 7.
Winfield formation Carboniferous, Kansas, Prosser and Beede, 1.
Winnipeg sandstone, Ordovician, Canada, Dowling, 1.
Winoka gravels, Tertiary, Missouri, Hays, 1.
Winoka gravels, Tertiary, Missouri, Park (E. J.), 1.
Winslow formation, Carboniferous, Arkansas, Adams and Ulrich, 1.
Winslow formation, Carboniferous, Indian Territory, Taff, 17.
Winslow formation, Carboniferous, Arkansas, Adams (G. I.), 15.
Wisconsin, Pleistocene, Iowa, Macbride, 1.
Wisconsin, Quaternary, New York, Veatch, 4.
Wisconsin drift, Quaternary, Iowa, Macbride, 3.
Wisconsin drift, Quaternary, Ohio, Prosser, 10.
Wisconsin gravels, Quaternary, Iowa, Macbride, 3.
Wisconsin, Quaternary, New Jersey, Salisbury and others, 1.
Wisconsin drift, Quaternary, Leverett, 4.
Wisconsin, Pleistocene, Iowa, Beyer and Williams, 2.
Wisconsin deposits, Quaternary, Indiana and Illinois, Fuller and Clapp, 2.
Wisconsin drift, Quaternary, Pennsylvania, Leverett, 10.
Wisconsin stage, Pleistocene, Iowa, Macbride, 4.
Wisconsin stage, Pleistocene, Iowa, Williams (I. A.), 1.
Wiscoy beds, included in Portage, Devonian, New York, Luther, 1.
Wiscoy shales, Devonian, New York, Clarke, 19, 20.
Wiscoy shales, Devonian, New York, Luther, 2.
Wise formation, White, 23.
Wissahickon mica-schist, Ordovician?, Maryland, Mathews, 6.
Wissahickon mica-gneiss, Ordovician, Pennsylvania, Bascom, 3.
Wissahickon schist, Maryland, Mathews and Miller, 1.
Wissahickon mica-gneiss and mica-schist (Hudson), Ordovician, Pennsylvania, Bascom, 2.
Wolf Creek conglomerate, Carbonic, New York, Clarke, 20.
Wolf Creek conglomerate lentil, included in Cattaraugus beds, Devonian, New York, Glenn, 1.
Woodbine formation, Cretaceous, Texas, Hill (R. T.), 3.
Woodbridge clay, Cretaceous, New Jersey, Kümmel and Knapp, 1.
Woodbury clay, Cretaceous, New Jersey, Kümmel and Knapp, 1.
Woodford chert, Devonian, Indian Territory, Taff, 3, 13.
Woodford chert, Devono-Carboniferous, Indian Territory, Taff, 6.
Woods Bluff beds, included in Lignitic, Eocene, Tertiary, Georgia, Harris, 5.
Woodward formation, Carboniferous (Permian), Oklahoma, Gould, 14.
Woodward division, Permian, Oklahoma, Gould, 9.
Woodstock member or substage, Eocene, Maryland, included in Nanjemoy formation or stage, Clark and Martin, 1.
Worcester phyllite and mica-schist, Massachusetts, Perry and Emerson, 1.
Worcester quartzite, Massachusetts, Perry and Emerson, 1.
Wrangell lavas, Alaska, Mendenhall, 8.
Wreford formation, Carboniferous, Oklahoma, Kirk, 1.
Wreford limestone, Carboniferous, Kansas, Prosser and Beede, 1.
Wreford limestone, Carboniferous, Kansas, Adams, Girty, and White, 1.
Wreford limestone, Carboniferous, Kansas, Beede and Sellards, 1.
Wreford limestone, Carboniferous, Kansas, Prosser, 7.
Wyoming formation, Carboniferous-Triassic, Colorado, Darton, 18.
Wyoming conglomerate, Tertiary, Wyoming, Spencer (A. C.), 10.
Wyoming (Lower) formation, Carboniferous (Pennsylvanian), Colorado, Darton, 16.
Wyoming (Upper) or Chugwater, Triassic(?), and Permian(?), Colorado, Darton, 16.
Yakima basalt, Tertiary, Washington, Smith (G. O.), 3, 7, 8, 13.
Yakima basalt, Tertiary, Washington, Smith and Calkins, 1.
Yakutat formation, Jurassic, Alaska, Ulrich, 4.
Yampa limestone, member, Carboniferous, Utah, Keith, 13.
Yarmouth soil, Pleistocene, Iowa, Udden, 2.
Yavapai schist, Algonkian, Arizona, Jaggar and Palache, 1.
Yegua clays, Eocene, Texas, Dumble, 13.
Yegua clays, Eocene, Tertiary, Texas, Hayes and Kennedy, 1.

Geologic formations described—Continued.
  Yellow loam, Pleistocene, Mississippi, Logan, 2.
  Yellville formation, Ordovician, Arkansas, Adams and Ulrich, 1.
  Yellville formation, Ordovician, Arkansas, Adams (G. I.), 15.
  Yellville limestone, Ordovician, Arkansas, Ulrich, 5.
  Yonkers gneiss, New York, Eckel, 6.
  Yonkers gneiss, post-Hudson, New York, Merrill and others, 1.
  Yukon silts, Quaternary, Alaska, Collier, 2.
Geologic maps.[a]
  Alabama, Eckel and Crider, 1.
  Alabama, Smith (E. A.), 2, 8, 9.
  Alabama, Smith and McCalley, 1.
  Alaska, Brooks, 4.
  Alaska, Brooks and others, 1.
  Alaska, Collier, 1, 2, 8.
  Alaska, Mendenhall, 1, 2, 8.
  Alaska, Mendenhall and Schrader, 1.
  Alaska, Moffit, 3.
  Alaska, Prindle, 2.
  Alaska, Schrader, 3.
  Alaska, Schrader and Spencer, 1.
  Alaska, Stanton and Martin, 1.
  Alaska, Wright (C. W.), 2.
  Arizona, Jaggar and Palache, 1.
  Arizona, Lee (W. T.), 9.
  Arizona, Lindgren, 28, 29.
  Arizona, Ransome, 6, 13, 14.
  Arkansas, Adams (G. I.), 15.
  Arkansas, Adams and Ulrich, 1.
  Arkansas, Branner, 2.
  Arkansas, Hayes (C. W.), 2.
  Arkansas, Taff, 5, 17.
  Arkansas, Van Ingen, 1.
  California, Campbell (M. R.), 4.
  California, Diller, 18.
  California, Fairbanks, 7.
  California, Hershey, 14.
  California, Lawson and Palache, 1.
  California, Nutter, 1.
  California, Spurr, 14.
  Canada, Adams and LeRoy, 1.
  Canada, Ami, 8.
  Canada, Barlow, 7.
  Canada, Bel, 2.
  Canada, Bell (Robert), 1, 3, 5.
  Canada, Boright, 1.
  Canada, Brewer (W. M.), 6.
  Canada, Buchan, 2.
  Canada, Burwash, 1.
  Canada, Cirkel, 4.
  Canada, Coleman, 2.
  Canada, Coleman and Willmott, 1.
  Canada, Corkill, 1.
  Canada, Daly, 1.
  Canada, Dawson, 4, 5.
  Canada, Dowling, 1, 6, 11.
  Canada, Dresser, 9.
  Canada, Ells (R. W.), 2, 7, 12, 20, 23.
  Canada, Fletcher, 3, 6.
  Canada, Gwillim, 1.
  Canada, Ingall and Denis, 1.
Geologic maps—Continued.
  Canada, Leach (W. W.), 2.
  Canada, Low, 2.
  Canada, McConnell, 3, 5, 7.
  Canada, Miller (W. G.), 4.
  Canada, Poole, 10.
  Canada, Tyrrell, 1, 3.
  Canada, Willmott, 1.
  Canada, Wilson (A. W. G.), 9.
  Colorado, Cross (W.), 7.
  Colorado, Cross and Howe, 1, 3.
  Colorado, Cross and Spencer, 1.
  Colorado, Darton, 18.
  Colorado, Fenneman, 5, 10.
  Colorado, Hills, 1.
  Colorado, Lee (W. T.), 2.
  Colorado, Purington, 1, 3.
  Colorado, Ransome, 1.
  Connecticut, Hobbs, 2, 5.
  Connecticut, Loughlin, 1.
  Connecticut, Rice, 1.
  District of Columbia, Darton and Keith, 1.
  Georgia, Eckel, 34.
  Georgia, Hayes (C. W.), 1.
  Georgia, McCallie, 9.
  Georgia, Watson (T. L.), 2, 8, 12.
  Greenland, Böggild, 3.
  Greenland, Nathorst, 1.
  Greenland, Nordenskjöld, 1.
  Guatemala, Sapper, 3.
  Haiti, Tippenhauer, 2.
  Idaho, Bell (R. N.), 4.
  Idaho, Lindgren, 21.
  Idaho, Lindgren and Drake, 1, 2.
  Idaho, Russell, 1.
  Illinois, Bain, 14, 19.
  Illinois, Eckel, 34.
  Illinois, Fuller and Clapp, 2.
  Illinois, Leverett, 1.
  Illinois, Rolfe, 1.
  Indiana, Ashley, 2.
  Indiana, Blatchley, 6.
  Indiana, Eckel, 34.
  Indiana, Foerste, 10.
  Indiana, Fuller and Clapp, 2.
  Indiana, Hopkins (T. C.), 10.
  Indiana, Leverett, 4.
  Indiana, Newsom, 3.
  Indiana, Siebenthal, 2.
  Indiana, Ulrich, 8.
  Indian Territory, Adams (G. I.), 2.
  Indian Territory, Adams, Girty, and White, 1.
  Indian Territory, Taff, 2–4, 6, 7–11, 13, 17.
  Iowa, Bain, 14, 15.
  Iowa, Beyer and Young, 1.
  Iowa, Calvin, 1, 10–12, 14.
  Iowa, Leonard, 3.
  Iowa, Macbride, 1–4.
  Iowa, Miller (B. L.), 1.
  Iowa, Norton, 1.
  Iowa, Savage, 2, 3, 7, 8.
  Iowa, Udden (Jon A.), 1.
  Iowa, Udden, 2, 3, 5, 8.
  Iowa, Wilder, 3, 6.

[a] Includes geologic maps of the whole or any part of the States mentioned.

Geologic maps—Continued.
Iowa, Williams (I. A.), 1.
Kansas, Adams (G. I.), 2.
Kansas, Adams, Girty, and White, 1.
Kansas, Adams, Haworth, and Crane, 1.
Kansas, Bailey (E. H. S.), 1.
Kansas, Beede and Sellards, 1.
Kansas, Darton, 18.
Kansas, Gould, 5.
Kansas, Prosser and Beede, 1.
Kansas, Smith (A. J.), 1, 4.
Kentucky, Bain, 19
Kentucky, Eckel, 34.
Kentucky, Foerste, 3, 10.
Kentucky, Smith (W. S. T.), 3.
Kentucky, Tight, 4.
Kentucky, Ulrich, 8.
Lake Superior region, Leith, 14.
Louisiana, Adams (G. I.), 2.
Louisiana, Hager, 1.
Louisiana, Harris, 2.
Louisiana, Hayes and Kennedy, 1.
Louisiana, Veatch, 1.
Maine, Smith (G. O.), 2.
Maine, Smith and White, 1.
Maryland, Clark (W. B.), 2, 3, 6, 8.
Maryland, Clark and Bibbins, 1.
Maryland, Clark and Martin, 1, 5.
Maryland, Clark, Martin, and Rutledge, 1.
Maryland, Darton and Keith, 1.
Maryland, Eckel, 34.
Maryland, Leonard, 1.
Maryland, Mathews, 6.
Maryland, Mathews and Miller, 1.
Maryland, Ries, 5.
Massachusetts, Burr, 1.
Massachusetts, Clapp, 1.
Massachusetts, Crosby, 8.
Massachusetts, Goldthwait, 1.
Massachusetts, Perry and Emerson, 1.
Massachusetts, Sears, 1.
Massachusetts, Taylor (F. B.), 3.
Massachusetts, Wilson (A. W. G.), 1.
Mexico, Böse, 7.
Mexico, Finlay (G. I.), 8.
Mexico, Ordoñez, 1.
Mexico, Phillips (W. B.), 13.
Michigan, Bayley, 1.
Michigan, Eckel, 34.
Michigan, Grimsley, 7.
Michigan, Lane, 7, 11, 14, 15, 39.
Michigan, Leverett, 3, 4.
Michigan, Macco, 1.
Michigan, Russell, 6, 23.
Michigan, Van Hise, 2, 14.
Michigan, Wright (F. E.), 6.
Michigan, Taylor (F. B.), 2.
Minnesota, Chamberlin (R. T.), 1.
Minnesota, Clements, 3.
Minnesota, Hall (C. W.), 3, 4.
Minnesota, Hall and Willard, 1.
Minnesota, Leith, 4.
Minnesota, Macco, 1.
Minnesota, Van Hise, 2.
Minnesota, Winchell (N. H.), 2.
Mississippi, Eckel, 34.

Geologic maps—Continued.
Mississippi, Eckel and Crider, 1.
Mississippi, Logan, 2.
Missouri, Adams and Ulrich, 1.
Missouri, Ball and Smith, 1.
Missouri, Buckley and Buehler, 1.
Missouri, Eckel, 34.
Missouri, Marbut, 1.
Missouri, Van Horn, 1.
Montana, Douglass, 4.
Montana, Lindgren, 21.
Montana, Rowe, 2.
Montana, Willis, 6.
Nebraska, Adams (G. I.), 4.
Nebraska, Barbour (E. H.), 8.
Nebraska, Burchard, 2.
Nebraska, Carmony, 1.
Nebraska, Darton, 10, 11, 18.
Nebraska, Gould, 5.
Nevada, Smith (D. T.), 2.
Nevada, Spurr, 6, 9, 29.
New Hampshire, Hitchcock (C. H.), 6, 10.
New Hampshire, Pirsson and Washington, 1.
New Jersey, Kümmel, 1.
New Jersey, Ries, 12.
New Jersey, Salisbury and others, 1.
New Mexico, Johnson (D. W.), 2, 4.
New Mexico, Keyes, 49.
New Mexico, Reagan, 1.
New Mexico, Yung and McCaffery, 1.
New York, Bishop (I. P.), 1.
New York, Clarke (J. M.), 19.
New York, Clarke and Luther, 1–3.
New York, Cleland, 2.
New York, Cumings, 6.
New York, Cushing, 2, 3, 9, 10.
New York, Dale, 5.
New York, Eckel, 5, 6, 34.
New York, Fairchild, 2.
New York, Finlay (G. I.), 2.
New York, Glenn, 1.
New York, Grabau, 1, 9.
New York, Gratacap, 7.
New York, Hartnagel, 1.
New York, Kemp and Hill, 1.
New York, Kindle, 4.
New York, Luther, 2.
New York, Merrill (F. J. H.), 6.
New York, Merrill and Magnus, 1.
New York, Merrill and others, 1.
New York, Rafter, 1.
New York, Ries, 4.
New York, Schneider, 8.
New York, Smyth (C. H.), 1.
New York, Van Ingen and Clark, 1.
New York, Woodworth, 2, 9, 10.
North Carolina, Keith, 4, 9, 11, 12.
North Carolina, Pratt, 10, 11.
North Carolina, Pratt and Lewis, 1.
North Dakota, Hall and Willard, 1.
Ohio, Bownocker, 1, 4.
Ohio, Eckel, 34.
Ohio, Foerste, 10.
Ohio, Fowke, 2.
Ohio, Griswold, 1.

Geologic maps—Continued.
Ohio, Hyde, 1.
Ohio, Leverett, 4.
Ohio, Tight, 2, 4.
Ohio, Todd (J. H.), 1.
Oklahoma, Gould, 14.
Oklahoma, Taff, 13.
Oregon, Diller, 4, 11.
Oregon, Lindgren, 4.
Oregon, Lindgren and Drake, 1.
Panama, Hershey, 5.
Pennsylvania, Butts, 4, 6, 7.
Pennsylvania, Campbell (M. R.), 8, 18.
Pennsylvania, Clapp, 4.
Pennsylvania, Eckel, 34.
Pennsylvania, Fuller and Alden, 1, 2.
Pennsylvania, Ihlseng, 1.
Pennsylvania, Leverett, 4.
Pennsylvania, Peck, 1.
Pennsylvania, Richardson (G. B.), 3.
Pennsylvania, Stone (R. W.), 6–8.
Pennsylvania, Woolsey, 3.
Philippine Islands, Burritt, 1.
South Dakota, Bendrat, 1.
South Dakota, Darton, 1, 14, 18, 26.
South Dakota, Darton and O'Harra, 1.
South Dakota, Darton and Smith, 1.
South Dakota, Jaggar, 1, 5.
South Dakota, Reagan, 5.
South Dakota, Todd (J. E.), 9–11, 15.
South Dakota, Todd and Hall, 1, 3.
Tennessee, Eckel, 34.
Tennessee, Hayes and Ulrich, 1.
Tennessee, Keith, 4, 9, 11, 12.
Tennessee, Ulrich, 7.
Texas, Adams (G. I.), 2, 11.
Texas, Dumble, 13.
Texas, Gidley, 4.
Texas, Hager, 1.
Texas, Hayes and Kennedy, 1.
Texas, Hill (R. T.), 3, 5.
Texas, Richardson (G. B.), 4.
Texas, Taff, 4, 15.
Texas, Udden (Johan A.), 11.
United States, Hayes (C. W.), 6, 7.
United States, Maury, 1.
United States (in part), White (D.), 14.
United States (east of Mississippi River), Ries, 6.
Utah, Berkey, 8.
Utah, Huntington and Goldthwait, 2.
Utah, Keith, 13.
Vermont, Dale, 3.
Vermont, Daly, 7.
Vermont, Marsters, 3.
Vermont, Perkins, 6, 11.
Virginia, Eckel, 23.
Virginia, Darton and Keith, 1.
Virginia, Woodworth, 3, 4.
Washington, Landes and Ruddy, 1.
Washington, Smith (G. O.), 3, 6–8, 13.
Washington, Smith and Calkins, 1.
Washington, Smith and Willis, 1.
Washington, Spurr, 3.
Washington, Willis, 11.
West Indies, Spencer (J. W.), 5.

Geologic maps—Continued.
West Indies, Tippenhauer, 1.
West Virginia, Campbell (M. R.), 2.
West Virginia, Tight, 4.
West Virginia, White (I. C.), 1, 8.
Wisconsin, Alden, 3, 4.
Wisconsin, Bain, 14.
Wisconsin, Berkey, 6.
Wisconsin, Buckley, 1.
Wisconsin, Chamberlin (R. T.), 1.
Wisconsin, Grant (U. S.), 1, 5.
Wisconsin, Kirchoffer, 1.
Wisconsin, Macco, 1.
Wisconsin, Van Hise, 2, 14.
Wisconsin, Weidman, 5.
Wyoming, Adams (G. I.), 4.
Wyoming, Darton, 1, 14, 18, 26.
Wyoming, Darton and O'Harra, 1.
Wyoming, Kemp and Knight, 1.
Wyoming, Knight (W. C.), 3.
Wyoming, Knight and Slosson, 2.
Wyoming, Loomis, 2.
Wyoming, Smith (W. S. T.), 1.
Wyoming, Spencer (A. C.), 10.

Georgia.
Aplite, pegmatite, and tourmaline bunches in Stone Mountain granite, Watson (T. L.), 5.
Bauxite deposits of Georgia, Watson (T. L.), 12.
Cement materials and industry of the United States, Eckel, 34.
Clays of the United States, Ries, 6.
Coal deposits of Georgia, McCallie, 9.
Copper deposits in Georgia, Weed, 26.
Dahlonega gold district, Eckel, 15.
Dahlonega mining district, Eckel, 21.
Eocene outcrops in central Georgia, Harris, 5.
Fuller's earth deposits of Florida and Georgia, Vaughan, 18.
Geologic relations of the iron ores in the Cartersville district, Hayes (C. W.), 1.
Geology of the Tallulah gorge, Jones (S. P.), 1.
Georgia bauxite deposits, Watson (T. L.), 2.
Gold and pyrite deposits of the Dahlonega district, Eckel, 16.
Gold mining in McDuffie County, Fluker, 1, 2.
Granites and gneisses of Georgia, Watson (T. L.), 8.
Granitic rocks of Georgia, Watson (T. L.), 1.
Hot springs of the southern United States, Weed, 39.
Iron ores of Cartersville district, Hayes and Eckel, 1.
Lafayette and Columbia formations and their botanical features, Harper (R. M.), 2.
Manganese ore deposits of Georgia, Catlett, 2.
Manganese ore deposits of Georgia, Watson (T. L.), 9.

Georgia—Continued.
  Manganese ores of the Cartersville district, Hayes (C. W.), 11.
  Meteoreisen von Forsyth County, Cohen, 2.
  Mineral resources of Georgia, McCallie, 2.
  Ocher deposits of Bartow County, Watson (T. L.), 10.
  Ocher deposits in Cartersville district, Hayes and Eckel, 2.
  Oligocene of western Europe and southern United States, Maury, 1.
  Origin of the phenocrysts in porphyritic granites, Watson (T. L.), 3.
  Roads and road-building materials of Georgia, McCallie, 3.
  Rome folio, Hayes (C. W.), 5.
  Sandstone dikes near Columbus, McCallie, 6.
  Seminole copper deposit, Watson (T. L.), 17.
  Shell Bluff, one of Lyell's original localities, Vaughan, 4.
  Southern Appalachian coal field, Hayes (C. W.), 7.
  Trap dikes of Georgia, McCallie, 1.
  Underground waters of Georgia, McCallie, 11.
  Uranophane in Georgia, Watson (T. L.), 7.
  Vein structure at the Reynolds mine, Collins (G. E.), 1.
  Water resources of Georgia, McCallie, 8.
  Weathering of granitic rocks, Watson (T. L.), 4.
  Well contamination at Quitman, McCallie, 10.

Glacial Geology.
  Alaska.
    Alaska glaciers and glaciation, Gilbert, 13.
    Glacial phenomena of Seward Peninsula, Brooks and Collier, 1.
    Glaciers of Alaska, Davidson, 1.
  Appalachian region.
    Buried valley of Wyoming, Corss, 1.
    Buried valley of Wyoming, Griffith, 1.
    Elkland-Tioga folio, Fuller and Alden, 2.
    Extra-morainic pebbles in Pennsylvania, Woolsey, 2.
    Gaines folio, Fuller and Alden, 1.
    Geological excursion in Pittsburg region, Grant (U. S.), 4.
    Glacial gravels of the Kittanning quadrangle, Leverett, 10.
    Kansas glaciation and its effects on the river system of northern Pennsylvania, Williams (E. H.), 2.
    Kittanning folio, Butts, 4.
  Atlantic coast region.
    Geology of Long Island, Veatch, 5.
    Glacial conditions on Long Island, Buffet, 1.

Glacial Geology—Continued.
  Atlantic coast region—Continued.
    Glacial geology of New Jersey, Salisbury and others, 1.
    Glacial period on Long Island, Veatch, 4.
    New York City folio, Merrill and others, 1.
  Canada.
    Ancient channels of Ottawa River, Ells (R. W.), 5.
    Ancient drainage at Niagara Falls, Currie, 1.
    Duration of Toronto interglacial period, Coleman, 9.
    Economic resources of Moose River basin, Bell (J. M.), 2.
    Effect of superficial débris on the advance and retreat of some Canadian glaciers, Ogilvie, 2.
    Exploration de l'île d'Anticosti, Combes, 1.
    Exploration of east coast of Hudson Bay, Low, 2.
    Geologische Reiseskizzen aus Nordamerika, Felix, 1.
    Glacial beds near Toronto, Coleman, 1.
    Glacial lakes and Pleistocene changes in St. Lawrence Valley, Coleman, 22.
    Glaciation in Atlin district, Gwillim, 3.
    Glaciation of Mount Orford, Chalmers, 9.
    Iroquois beach in Ontario, Coleman, 16, 17.
    Macmillan River, Yukon district, McConnell, 3.
    Marine and fresh water beaches, Coleman, 2.
    Notes from Burford Township, Yates (W.), 1.
    Observations on glaciers, Vaux, 1.
    Physical geology of central Ontario, Wilson (A. W. G.), 2.
    Raised shore lines of St. Lawrence Valley and Great Lakes, Chalmers, 6.
    Toronto and Scarboro drift series, Upham, 4.
    Trent River system, Wilson (A. W. G.), 9.
    Variations périodiques des glaciers, Vaux and Vaux, 2.
  Great Basin region.
    Extinct glaciers, Stone (G. H.), 2.
    Glaciation of San Francisco Mountain, Atwood, 1.
  Great Lakes region.
    Alabaster area, Gregory (W. M.), 3.
    Contributions to the problem of Niagara, Grabau, 3.
    Development of Wabash drainage system, McBeth, 1.
    Drumlin areas in Michigan, Russell, 24.
    Drumlins of southeastern Wisconsin, Alden, 4.
    Drumlins of the Grand Traverse region, Leverett, 14.

Glacial Geology—Continued.

Great Lakes region—Continued.

- Emigrant diamonds in America, Hobbs, 8.
- Eskers and esker lakes of Indiana, Dryer, 1.
- Geological history of the Great Lakes, Upham, 33.
- Geological reconnaissance along north shore, Russell, 23.
- Glacial features of Lower Michigan, Leverett, 6.
- Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.
- Glacial geology of Grand Rapids area, Leverett, 9.
- Glacial geology of southern peninsula of Michigan, Leverett, 8.
- Glacial lake Nicolet, Upham, 17.
- Glacial phenomena in Indiana and Michigan, Montgomery (H. T.), 1.
- Ice work in southeastern Michigan, Sherzer, 1.
- Mineralogy of Chicago area, Crook, 1.
- Physiographical field notes in the town of Wauwatosa, Wis., Bruncken, 1.
- Physical geography of New York State, Tarr, 2.
- Preglacial erosion in the course of the Niagara gorge, Upham, 2.
- Report of bowlder committee, Wright (G. F.), 1, 2.
- So-called alkali spots of drift sheets, Willcox, 2.
- Spy Run and Poinsett Lake bottoms, Price and Shaaf, 1.
- Story of Niagara, Hitchcock (C. H.), 2.
- Surface geology of Alcona County, Mich., Leverett, 3.
- Surface geology of Lapeer County, Mich., Taylor (F. B.), 2.
- Vermilion iron-bearing district of Minnesota, Clements, 3.
- Western Indiana bowlder belts, McBeth, 1.

Great Plains region.

- Alexandria folio, Todd and Hall, 1.
- Geology and water resources of the James River Valley, Todd and Hall, 2.
- Geology of Lincoln County, S. Dak., Bendrat, 1.
- Mitchell folio, Todd (J. E.), 11.
- Olivet folio, Todd (J. E.), 9.
- Parker folio, Todd (J. E.), 10.
- Region between the Northern Pacific Railroad and Missouri River, Wood (L. H.), 1.

Mississippi Valley region.

- Aftonian gravels, Calvin, 15.
- Age of Lansing skeleton, Wright (G. F.), 4.
- Age of St. Croix Dalles, Upham, 31.
- Age of the Kansan drift sheet, Hershey, 4.

Glacial Geology—Continued.

Mississippi Valley region—Continued.

- Another glacial wonder, Wright (G. F.), 10.
- Antiquity of fossil man of Lansing, Kans., Upham, 18.
- Bluffs of Missouri River, Owen, 1.
- Buried peat bed in Dodge township, Savage, 5.
- Concrete examples from topography of Howard County, Calvin, 6.
- Dalles of the St. Croix, Berkey, 1.
- Deposition of the loess, Owen, 5.
- Drift exposure in Tama County, Iowa, Savage, 1.
- Evidences (?) of water deposition of loess, Shimek, 14.
- Fossil man of Lansing, Kans., Williston, 18.
- Fresh-water shells in the loess, Shimek, 7.
- Geography and geology of Minnesota, Hall (C. W.), 6.
- Geologic relations of the human relics of Lansing, Kans., Chamberlin (T. C.), 5.
- Geology of Benton County, Savage, 7.
- Geology of Chickasaw County, Iowa, Calvin, 11.
- Geology of Clinton County, Udden (Jon A.), 1.
- Geology of Emmet, Palo Alto, and Pocahontas counties, Macbride, 4.
- Geology of Fayette County, Savage, 8.
- Geology of Howard County, Iowa, Calvin, 10.
- Geology of Illinois, Rolfe, 1.
- Geology of Jasper County, Iowa, Williams (I. A.), 1.
- Geology of Kossuth, Hancock, and Winnebago counties, Macbride, 3.
- Geology of Mills and Fremont counties, Udden, 8.
- Geology of Mitchell County, Iowa, Calvin, 12.
- Geology of Prairie Island, Upham, 21.
- Geology of Tama County, Iowa, Savage, 3.
- Glacial bowlders along Osage River, in Missouri, Buckley, Ball, and Smith, 1.
- Glacial drift of northern Iowa, Webster, 4.
- Glacial drift in the Dakotas, Montana, Idaho, and Washington, Upham, 27.
- Glacial features of the St. Croix Dalles region, Chamberlin (R. T.), 1.
- Glacial lakes of Minnesota, Winchell (N. H.), 3.
- Interglacial clays of Grantsburg, Berkey, 6.
- Keewatin and Laurentide sheets in Minnesota, Elftman, 2.
- Lansing deposit not loess, Shimek, 12.
- Lansing skeleton, Owen, 2.
- Lansing skeleton, Winchell (N. H.), 12.
- Loess, Broadhead, 6.
- Loess and the Iowan drift, Shimek, 13.

Glacial Geology—Continued.

Mississippi Valley region—Continued.

- Loess and the Lansing man, Shimek, 5.
- Loess at St. Joseph, Owen, 3.
- Loess in the Missouri Valley, Wright (G. F.), 9.
- Loess of southwestern Iowa, Willcox, 1.
- Man in the Ice Age at Lansing, Kans., and Little Falls, Minn., Upham, 8.
- Old channels of the Mississippi in Iowa, Leverett, 2.
- Particular case of glacial erosion, Sardeson, 14.
- Physiography of Iowa, Calvin, 13.
- Pleistocene geology of the Concannon farm, near Lansing, Kans., Winchell (N. H.), 14.
- Probiscidean fossils of Pleistocene deposits in Illinois and Iowa, Udden, 11.
- So-called alkali spots of drift-sheets, Willcox, 2.
- Toledo lobe of Iowan drift, Savage, 4.
- Valley loess and fossil man of Lansing, Upham, 14.
- Was man in America in the Glacial period, Winchell (N. H.), 16.

New England and New York.

- Artesian well sections at Ithaca, Tarr, 5.
- Ancient water levels of Champlain and Hudson valleys, Woodworth, 10.
- Clays of Connecticut, Loughlin, 1.
- Delta-plain at Andover, Mass., Mills (F. S.), 2.
- Delta plains of Nashua Valley, Crosby, 8.
- Drainage features of central New York, Tarr, 11.
- Drainage features of southern central New York, Tarr, 14.
- Drift fossils, Hollick, 8.
- Esker in western New York, Comstock (F. M.), 1.
- Finger Lake region of western New York, Dryer, 4.
- Geological history of Charles River, Clapp, 1.
- Geology and paleontology of Niagara Falls, Grabau, 1.
- Geology of central Cape Cod, Julien, 3.
- Geology of Charles River estuary, Crosby, 7.
- Geology of Fishers Island, Fuller, 29.
- Geology of Grand Isle County, Perkins, 11.
- Geology of Long Island, Veatch, 5.
- Geology of Paradox Lake quadrangle, Ogilvie, 6.
- Geology of the vicinity of Little Falls, Cushing, 9.
- Geology of Worcester, Mass., Perry and Emerson, 1.
- Glacial and post-Glacial history of the Hudson and Champlain valleys, Peet, 1.

Glacial Geology—Continued.

New England and New York—Continued.

- Glacial conditions on Long Island, Buffet, 1.
- Glacial erosion in Finger Lake region, Campbell (M. R.), 19.
- Glacial features of Syracuse, Fairchild, 13.
- Glacial lakes and marine submergence in the Hudson-Champlain Valley, Upham. 32.
- Glacial lakes, Hudson-Champlain and St. Lawrence, Upham, 19.
- Glacial period on Long Island, Veatch, 4.
- Glacial phenomena in Adirondacks and Champlain Valley, Ogilvie, 1.
- Glacial pot holes in Maine, Manning, 1.
- Glacial remains near Woodstock, Connecticut, Eggleston, 1.
- Glacial waters from Oneida to Little Falls. Fairchild, 8.
- Glaciation of the Berkshire Hills, Taylor (F. B.), 4.
- Glaciation of the Green Mountains, Hitchcock (C. H.), 7, 8.
- Gravel deposits in Glacial Lake Charles, Clapp, 2.
- Hanging valleys in the Finger Lake region of New York, Tarr, 6.
- Horseheads outlet of the Glacial lakes of central New York, Fuller (M. L.), 7.
- Ice erosion theory a fallacy, Fairchild, 11.
- Instance of action of ice sheet upon projecting rock masses, Hobbs, 12.
- Instances of moderate glacial erosion, Tarr, 9.
- Inter-Glacial gorge problem, Matson, 1.
- Medford dike area, Wilson (A. W. G.), 1.
- Moraines and eskers in the White Mountains, Upham, 23.
- Moraines of Seneca and Cayuga Lake valleys, Tarr, 7, 10.
- New problems in glaciology, Fairchild, 14.
- Physical geography, etc., of Essex County, Mass., Sears, 1.
- Pleistocene features in the Syracuse region, Fairchild, 12.
- Pleistocene geology of Mooers quadrangle, Woodworth, 9.
- Pleistocene geology of western New York, Fairchild, 2.
- Pleistocene history of Fishers Island, Fuller (M. L.), 40.
- Pre-Glacial stream flow in central New York, Carney, 2.
- Pre-Iroquois channels between Syracuse and Rome, Fairchild, 4.
- Pre-Kansan and Iowan deposits of Long Island, Fuller (M. L.), 6.
- Recessional ice borders in Berkshire County, Mass., Taylor (F. B.), 3.

Glacial Geology—Continued.
New England and New York—Continued.
Representatives of pre-Wisconsin till, Fuller (M. L.), 1.
River terraces and reversed drainage, Mills (F. S.), 1.
Sand plains of Glacial Lake Sudbury, Goldthwait, 1.
Structure and composition of delta plains, Crosby, 11.
Water supply from delta type of sand plain, Crosby, 13.
Ohio Valley region.
Changes in drainage near Lancaster, Hyde, 1.
Ditney folio, Fuller and Ashley, 1.
Drainage modifications in Knox, Licking, and Coshocton counties, Clark (W. Blair), 1.
Drainage modifications in Washington and adjacent counties, Ohio, Tight, 2.
Extra-Glacial abandoned valleys of Ohio basin, Campbell (M. R.), 1.
Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.
Gold and diamonds in Indiana, Blatchley, 5
History of Little Miami River, Bownocker, 1.
Inter-Glacial valley in Illinois, Hubbard (G. D.), 1.
Lake Licking, a contribution to the buried drainage of Ohio, Tight, 1.
Marl-loess of lower Wabash Valley, Fuller and Clapp, 1.
Pre-Glacial drainage conditions in vicinity of Cincinnati, Fowke, 2.
Pre-Glacial drainage of Ohio, Fowke, 1.
Pre-Glacial drainage of Wayne and adjacent counties, Ohio, Todd (J. H.), 1.
Report of bowlder committee, Wright (G. F.), 1, 2.
Topography and geography of Bean Blossom Valley, Monroe County, Ind., Marsters, 1.
Topography of Athens and vicinity, Ohio, Stearns (R. E. C.), 3.
Valley of lower Tippecanoe River, Breeze, 1.
Wabash River terraces in Tippecanoe County, Indiana, McBeth, 3.
Pacific coast region.
Geomorphogeny of Kern basin, Lawson (A. C.), 10.
Glacial drift in the Dakotas, Montana, Idaho, and Washington, Upham, 27.
Glacial drift in Washington, Upham, 28.
Glacial stages in Klamath Mountains, Hershey, 16.
Glacial work in the western mountains, Salisbury, 2.
Glaciers of Mount Hood and Mount Adams, Reid (H. F.), 17.

Glacial Geology—Continued.
Pacific coast region—Continued.
Mounts Hood and Adams and their glaciers, Reid (H. F.), 6.
Origin of transverse mountain valleys, Le Conte, 1.
River terraces and Glacial series in California, Hershey, 19.
River terraces of the Orleans basin, Hershey, 22.
Variations of Sierra glaciers, Gilbert, 18.
Rocky Mountain region.
Alps of Montana, Matthes, 2.
Arapahoe glacier in 1902, Fenneman, 3.
Arapahoe glacier in 1903, Henderson (J.), 2.
Current notes on physiography, Davis (W. M.), 15.
Extinct glaciers of Colorado, Henderson (J.), 4.
Geological reconnaissance in Montana and Idaho, Lindgren, 21.
Glacial drift in the Dakotas, Montana, Idaho, and Washington, Upham, 27.
Glacial work in the western mountains, Salisbury, 2.
Glaciation in Bighorn Mountains, Salisbury and Blackwelder, 1.
Glaciation of the Sawatch Range, Davis (W. M.), 58.
Pleistocene geology of the Sawatch Range, near Leadville, Colo., Capps and Leffingwell, 1.
Twin Lakes glaciated area, Westgate, 1.
General.
Bog plant societies of North America, Transeau, 1.
Bowlders due to rock decay, Upham, 24.
Cause of Glacial period, True (H. L.), 1.
Cause of osars, Colton, 1.
Criteria requisite for reference of relics to a Glacial age, Chamberlin (T. C.), 8.
Fjords and hanging valleys, Upham, 30.
Glacial climate, Hopkins (T. C.), 7.
Glacial epochs in Paleozoic time, White (D.), 22.
Glacial Lake Jean Nicolet, Upham, 20.
Glacial man, Wright (G. F.), 5.
Glacial pothole in National Museum, Merrill (G. P.), 10.
Glacier work, Scott (A. C.), 1.
Glacier cornices, Russell, 11.
Glaciers, Reid (H. F.), 7.
How long ago was America peopled? Upham, 16.
Ice ramparts, Buckley, 2.
Ice-retreat in Glacial Lake Neponset, Fuller (M. L.), 8.
Instances of moderate glacial erosion, Tarr, 9.
Lake Chelan and its glacier, Gannett, 3.
Length of post-Glacial time, Manson, 2.
Loess and its distribution, Leverett, 7.
Mammals and reptiles, Rutland, 1.

Glacial Geology—Continued.
General—Continued.
  Moraines and maximum diurnal temperature, Todd (J. E.), 3.
  Muir glacier, Andrews, 1.
  New evidence of epeirogenic movements causing and ending the Ice Age, Upham, 6.
  Note on Helicina occulta, Shimek, 15.
  Origin of eskers, Crosby, 3.
  Past and future of Niagara Falls, Upham, 22.
  Physical conditions in America during man's early occupancy, Wright (G. F.), 13.
  Post-Glacial origin and migration of life of northeastern United States, Adams (C. C.), 2.
  Progression des glaciers, leur stratification et leurs veines, Reid (H. F.), 1.
  Recent progress in glaciology, Salisbury, 4.
  Statics of a tidal glacier, Gilbert, 12.
  Summary of literature of North American Pleistocene geology, Leverett, 5.
  Time divisions of Ice Age, Upham, 5.
  Variation of glaciers in North America, Reid (H. F.), 2, 3, 5, 6.
Greenland.
  Bathymetrical features of the north Polar seas, Nansen, 2.
  Bidrag till nordöstra Grönlands geologi, Nathorst, 1.
  Cape York meteorites, Hovey, 42.
  Eisenführenden Gesteinen der Insel Disko, Nicolau, 1.
  Géologie du Grönland, Rabot, 1.
  Ilvaite from Siorarsuit at Julianehaab, Böggild, 1.
  Jurassic fossils from east Greenland, Madsen, 1.
  Jurassic rocks of east Greenland, Skeat, 1.
  Mineralogia Grœnlandica, Böggild, 5.
  Mineralogisk resa i Syd-Groenland, Flink, 1.
  Mineralogisk-petrografiske undersoegelser af Groenlandske nefelinsyeniter og beslægtede bjægarter, Ussing, 1.
  Minerals from Julianehaab, Böggild, 2.
  Minerals from Narsarsuk, Flink, 2.
  Minerals from the basalt of east Greenland, Böggild, 4.
  Minerals from the nephelite-syenite at Julianehaab, Böggild and Winther, 1.
  Nordhavets bund, Kolderup, 2.
  Petrographie Nord-Grönlands, Belowsky, 1.
  Rocks and minerals from north Greenland and Frobisher Bay, Emerson (B. K.), 8.
  Rocks from east coast of Greenland, Nordenskjöld, 1.
  Rocks of Nugsuaks Peninsula, Phalen, 1.
Greenland—Continued.
  Samples of the sea floor along the coast of east Greenland, Böggild, 3.
  Structur des grönländischen Inlandeises, Mügge, 1.
  Tertiary fauna at Kap Dalton, Ravn, 1.
  Translationsfähigkeit des Eises, Mügge, 2.
Guam.
  Earthquake records from Guam, Abbe, 4.
Guatemala.
  Alta Verapaz, Sapper, 3.
  Análisis de las cenizas del volcán de Santa María, Villaseñor, 1.
  Asche des Vulkans Sta. Maria, Brauns, 1, 2.
  Ausbruch des Vulkans St. Maria, Sapper, 5, 6.
  Cendres d'un volcan près du Santa Maria, Ordoñez, 5.
  Cenizas del volcán de Santa María, Ordoñez, 13.
  Earthquake and volcanic eruption in Guatemala, Eisen, 1.
  Erdbeben in Guatemala, Sapper, 4.
  Jadeit und Chloromelanit aus Guatemala, Bauer, 1.
  Produkte des Ausbruchs am S. Maria, Bergeat, 3.
  Produkte Vulkan S. Maria, Bergeat, 2.
  Recent earthquakes, Rockstroh, 1.
  Volcanic dust from Guatemala, Diller, 9.
  Volcanic eruptions in Guatemala, Winterton, 1.
  Vulkanische Ereignisse in Mittelamerika, Sapper, 20, 21.
Hawaiian Islands.
  Agricultural resources of Hawaii, Stubbs, 1.
  Brevity of tuff cone eruptions, Bishop (S. E.), 1.
  Characteristics of Kau, Emerson (J. S.), 1.
  Eruption of Mauna Loa, Wood (Edgar), 1.
  Fresh-water springs in the ocean, Hitchcock (C. H.), 11.
  Geology of Hawaiian Islands, Branner, 6.
  Geology of Hawaiian Islands, Dall, 11.
  Geology of Molokai, Lindgren, 18.
  Kilauea again active, Hitchcock (C. H.), 9.
  Mohokea caldera on Hawaii, Hitchcock (C. H.), 3.
  Observations on Hawaiian geology, Cross (W.), 4.
  Structure of Diamond Head, Dall, 1.
  Trachyte in Hawaii, Cross (W.), 6.
  Tuff cone at Diamond Head, Hitchcock (C. H.), 1.
  Water resources of Molokai, Lindgren, 13.

Honduras.
- Geological notes in Honduras, Baron, 1.

Hydrology.

Appalachian region.
- Hydrography of southern Appalachian region, Pressey, 1, 2.
- Underground waters of Maryland, Darton and Fuller, 1.
- Underground waters of New Jersey, Knapp (G. N.), 3.
- Underground waters of North Carolina, Fuller (M. L.), 24.
- Underground waters of Georgia, McCallie, 11.
- Underground waters of Pennsylvania, Fuller (M. L.), 23.
- Underground waters of South Carolina, Glenn, 10.
- Underground waters of Virginia, Darton and Fuller, 3.
- Underground waters of West Virginia, Fuller (M. L.), 26.
- Water resources of Chambersburg and Mercersburg quadrangles, Stose, 4.
- Water resources of Cowee and Pisgah quadrangles, North Carolina, Gale, 1.
- Water resources of Elders Ridge quadrangle, Stone (R. W.), 3.
- Water resources of Frostburg and Flintstone quadrangles, Martin (G. C.), 10.
- Water resources of Georgia, McCallie, 8.
- Water resources of New Jersey, La Forge, 1.
- Water resources of the Accident and Grantsville quadrangles, Martin (G. C.), 9.
- Water resources of the Curwensville, Patton, Ebensburg, and Barnesboro quadrangles, Clapp, 3.
- Water resources of the Middlesboro-Harlan region, Ashley, 6.
- Water resources of the Nicholas quadrangle, Ashley, 8.
- Water resources of the Pawpaw and Hancock quadrangles, Stose and Martin, 1.
- Water resources of the Philadelphia district, Bascom, 2.
- Water resources of the Waynesburg quadrangle, Stone (R. W.), 4.
- Wells at White Oak Ridge, Vermeule, 1.

Atlantic coast region.
- Artesian conditions on Long Island, Veatch, 6.
- Artesian wells, Woolman, 3.
- Fresh-water springs in the ocean, Hitchcock (C. H.), 11.
- New York City folio, Merrill and others, 1.
- Results of resurvey of Long Island, Fuller and Veatch, 1.
- Underground waters of Delaware, Darton, 22.

Hydrology—Continued.

Atlantic coast region—Continued.
- Underground waters of the District of Columbia, Darton and Fuller, 2.
- Underground waters of Florida, Fuller (M. L.), 25.
- Underground waters of Georgia, McCallie, 11.
- Underground waters of Maryland, Darton and Fuller, 1.
- Underground waters of New Jersey, Knapp (G. N.), 1.
- Underground waters of New Jersey, Knapp (G. N.), 3.
- Underground waters of North Carolina, Fuller (M. L.), 24.
- Underground waters of South Carolina, Glenn, 10.
- Underground waters of Virginia, Darton and Fuller, 3.
- Water resources of Georgia, McCallie, 8.
- Water resources of the Philadelphia district, Bascom, 2.

Canada.
- Artesian well in the Klondike, Tyrrell, 2.
- Artesian wells of Montreal, Adams (F. D.), 10.
- Artesian wells of Montreal, Adams and Le Roy, 1.

Great Basin region.
- Clifton folio, Lindgren, 28.
- Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
- Underground waters of Gila Valley, Lee (W. T.), 8.
- Underground waters of Salt River Valley, Lee (W. T.), 9.

Great Lakes region.
- Artesian flows from unconfined sandy strata, Fuller (M. L.), 39.
- Failure of wells in Michigan, Fuller (M. L.), 37.
- Ground-water problem in southeastern Michigan, Fuller (M. L.), 34.
- Natural features and economic development of drainage areas in Ohio, Flynn and Flynn, 1.
- Soils of Wisconsin, Weidman, 3.
- Sources of water supply in Wisconsin, Kirchoffer, 1.
- Underground waters of Indiana, Leverett, 12.
- Underground waters of lower Michigan, Lane, 38.
- Underground waters of Ohio, Leverett, 13.
- Water resources of Michigan, Cooper (W. F.), 1.
- Water supply of the lower peninsula of Michigan, Cooper (W. F.), 2.
- Waters of upper peninsula of Michigan, Lane, 40.

Great Plains region.
- Aladdin folio, Darton and O'Harra, 1.

Hydrology—Continued.
Great Plains region—Continued.
Alexandria folio, Todd and Hall, 1.
Camp Clarke folio, Darton, 10.
Casselton-Fargo folio, Hall and Willard, 1.
De Smet folio, Todd and Hall, 3.
Edgemont folio, Darton and Smith, 1.
Geology and underground water resources of the central Great Plains, Darton, 18.
Geology and water resources of Patrick and Goshen Hole quadrangles, Adams (G. I.), 4.
Geology and water resources of the James River Valley, Todd and Hall, 2.
Huron folio, Todd (J. E.), 15.
Jefferson County, Nebr., Carmony, 1.
Lignite of North Dakota, Wilder, 8.
Mitchell folio, Todd (J. E.), 11.
Olivet folio, Todd (J. E.), 9.
Parker folio, Todd (J. E.), 10.
Report of State geologist of Nebraska, Barbour (E. H.), 8.
Report on mineral waters, Bailey (E. H. S.), 1.
Scotts Bluff folio, Darton, 11.
Sundance folio, Darton, 26.
Water resources of Devils Lake region, Babcock, 2.
Gulf region.
Hot springs of southern United States, Weed, 39.
Pollution of deep wells in Georgia, Fuller (M. L.), 15.
Subterranean waters of Louisiana, Harris, 3.
Underground waters of Alabama, Smith, 6.
Underground waters of Louisiana, Harris, 6.
Underground waters of Louisiana and Arkansas, Veatch, 7, 8.
Underground waters of Mississippi, Johnson (L. C.), 1.
Underground waters of southern Louisiana, Harris, 6, 8.
Water resources of Alabama, Smith (E. A.), 5.
Water resources of Florida, Fuller (M. L.), 13.
Water resources of Mississippi, Johnson and Eckel, 1.
Water supplies from wells in southern Louisiana, Fuller (M. L.), 10.
Well contamination at Quitman, McCallie, 10.
Hawaiian Islands.
Fresh-water springs in the ocean, Hitchcock (C. H.), 11.
Geology of Hawaiian Islands, Branner, 6.
Lake Superior region.
Sources of water supply in Wisconsin, Kirchoffer, 1.

Hydrology—Continued.
Lake Superior region—Continued.
Underground waters of Wisconsin district, Schultz, 1.
Water resources of Minnesota, Hall (C. W.), 8.
Mexico.
Aguas subterraneas de Amozoc, Ordoñez, 12.
Fisiographia, geologia, e hydrologia de la Paz, Angermann, 1.
Hidrologia interna de Queretaro, Villarello, 5.
Hidrologia subterranea de Queretaro, Villarello, 10.
Mississippi Valley region.
Artesian wells in Iowa, Calvin, 9.
Deep wells as a source of water supply for Minneapolis, Winchell (N. H.), 27.
Geology of Oktibbeha County, Logan, 2.
Geology of the Hahatonka district, Scherer, 1.
Graydon sandstone and its mineral waters, Babcock and Minor, 1.
Hot springs of southern United States, Weed, 39.
Location of underground waters, Fuller (M. L.), 38.
Report on mineral waters, Bailey (E. H. S.), 1.
Soils of Wisconsin, Weidman, 3.
Sources of water supply in Wisconsin, Kirchoffer, 1.
Spring system of the Decaturville dome, Shepard, 4.
Springfield water supply, Park and Lyman, 1.
Springs of the Ozark region, Fuller (M. L.), 35.
Underground waters of Illinois, Leverett, 11.
Underground waters of Iowa, Norton, 3.
Underground waters of Minnesota, Hall (C. W.), 9.
Underground waters of Mississippi, Johnson (L. C.), 1.
Underground waters of Mississippi, Logan and Perkins, 1.
Underground waters of Missouri, Shepard, 5.
Underground waters of northern Arkansas, Purdue, 7.
Underground waters of Wisconsin district, Schultz, 1.
Water resources in northern Arkansas, Purdue, 9.
Water resources of Arkansas, Purdue, 5.
Water resources of Kentucky, Glenn, 5.
Water resources of Minnesota, Hall (C. W.), 8.
Water resources of Missouri, Shepard, 2.
Water resources of Tennessee, Glenn, 4.
Water resources of the Joplin district, Smith (W. S. T.), 4.

Honduras.
- Geological notes in Honduras, Baron, 1.

Hydrology.
- *Appalachian region.*
  - Hydrography of southern Appalachian region, Pressey, 1, 2.
  - Underground waters of Maryland, Darton and Fuller, 1.
  - Underground waters of New Jersey, Knapp (G. N.), 3.
  - Underground waters of North Carolina, Fuller (M. L.), 24.
  - Underground waters of Georgia, McCallie, 11.
  - Underground waters of Pennsylvania, Fuller (M. L.), 23.
  - Underground waters of South Carolina, Glenn, 10.
  - Underground waters of Virginia, Darton and Fuller, 3.
  - Underground waters of West Virginia, Fuller (M. L.), 26.
  - Water resources of Chambersburg and Mercersburg quadrangles, Stose, 4.
  - Water resources of Cowee and Pisgah quadrangles, North Carolina, Gale, 1.
  - Water resources of Elders Ridge quadrangle, Stone (R. W.), 3.
  - Water resources of Frostburg and Flintstone quadrangles, Martin (G. C.), 10.
  - Water resources of Georgia, McCallie, 8.
  - Water resources of New Jersey, La Forge, 1.
  - Water resources of the Accident and Grantsville quadrangles, Martin (G. C.), 9.
  - Water resources of the Curwensville, Patton, Ebensburg, and Barnesboro quadrangles, Clapp, 3.
  - Water resources of the Middlesboro-Harlan region, Ashley, 6.
  - Water resources of the Nicholas quadrangle, Ashley, 8.
  - Water resources of the Pawpaw and Hancock quadrangles, Stose and Martin, 1.
  - Water resources of the Philadelphia district, Bascom, 2.
  - Water resources of the Waynesburg quadrangle, Stone (R. W.), 4.
  - Wells at White Oak Ridge, Vermeule, 1.
- *Atlantic coast region.*
  - Artesian conditions on Long Island, Veatch, 6.
  - Artesian wells, Woolman, 3.
  - Fresh water springs in the ocean, Hitchcock (C. H.), 11.
  - New York City folio, Merrill and others, 1.
  - Results of resurvey of Long Island, Fuller and Veatch, 1.
  - Underground waters of Delaware, Darton, 22.

Hydrology—Continued.
- *Atlantic coast region*—Continued.
  - Underground waters of the District of Columbia, Darton and Fuller, 2.
  - Underground waters of Florida, Fuller (M. L.), 25.
  - Underground waters of Georgia, McCallie, 11.
  - Underground waters of Maryland, Darton and Fuller, 1.
  - Underground waters of New Jersey, Knapp (G. N.), 1.
  - Underground waters of New Jersey, Knapp (G. N.), 3.
  - Underground waters of North Carolina, Fuller (M. L.), 24.
  - Underground waters of South Carolina, Glenn, 10.
  - Underground waters of Virginia, Darton and Fuller, 3.
  - Water resources of Georgia, McCallie, 8.
  - Water resources of the Philadelphia district, Bascom, 2.
- *Canada.*
  - Artesian well in the Klondike, Tyrrell, 2.
  - Artesian wells of Montreal, Adams (F. D.), 10.
  - Artesian wells of Montreal, Adams and Le Roy, 1.
- *Great Basin region.*
  - Clifton folio, Lindgren, 28.
  - Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
  - Underground waters of Gila Valley, Lee (W. T.), 8.
  - Underground waters of Salt River Valley, Lee (W. T.), 9.
- *Great Lakes region.*
  - Artesian flows from unconfined sandy strata, Fuller (M. L.), 39.
  - Failure of wells in Michigan, Fuller (M. L.), 37.
  - Ground-water problem in southeastern Michigan, Fuller (M. L.), 34.
  - Natural features and economic development of drainage areas in Ohio, Flynn and Flynn, 1.
  - Soils of Wisconsin, Weidman, 3.
  - Sources of water supply in Wisconsin, Kirchoffer, 1.
  - Underground waters of Indiana, Leverett, 12.
  - Underground waters of lower Michigan, Lane, 38.
  - Underground waters of Ohio, Leverett, 13.
  - Water resources of Michigan, Cooper (W. F.), 1.
  - Water supply of the lower peninsula of Michigan, Cooper (W. F.), 2.
  - Waters of upper peninsula of Michigan, Lane, 40.
- *Great Plains region.*
  - Aladdin folio, Darton and O'Harra, 1.

Hydrology—Continued.
- *Great Plains region*—Continued.
  - Alexandria folio, Todd and Hall, 1.
  - Camp Clarke folio, Darton, 10.
  - Casselton-Fargo folio, Hall and Willard, 1.
  - De Smet folio, Todd and Hall, 3.
  - Edgemont folio, Darton and Smith, 1.
  - Geology and underground water resources of the central Great Plains, Darton, 18.
  - Geology and water resources of Patrick and Goshen Hole quadrangles, Adams (G. I.), 4.
  - Geology and water resources of the James River Valley, Todd and Hall, 2.
  - Huron folio, Todd (J. E.), 15.
  - Jefferson County, Nebr., Carmony, 1.
  - Lignite of North Dakota, Wilder, 8.
  - Mitchell folio, Todd (J E.) 11.
  - Olivet folio, Todd (J. E.), 9.
  - Parker folio, Todd (J. E.), 10.
  - Report of State geologist of Nebraska, Barbour (E. H.), 8.
  - Report on mineral waters, Bailey (E. H. S.), 1.
  - Scotts Bluff folio, Darton, 11.
  - Sundance folio, Darton, 26.
  - Water resources of Devils Lake region, Babcock, 2.
- *Gulf region.*
  - Hot springs of southern United States, Weed, 39.
  - Pollution of deep wells in Georgia, Fuller (M. L.), 15.
  - Subterranean waters of Louisiana, Harris, 3.
  - Underground waters of Alabama, Smith, 6.
  - Underground waters of Louisiana, Harris, 6.
  - Underground waters of Louisiana and Arkansas, Veatch, 7, 8.
  - Underground waters of Mississippi, Johnson (L. C.), 1.
  - Underground waters of southern Louisiana, Harris, 6, 8.
  - Water resources of Alabama, Smith (E. A.), 5.
  - Water resources of Florida, Fuller (M. L.), 13.
  - Water resources of Mississippi, Johnson and Eckel, 1.
  - Water supplies from wells in southern Louisiana, Fuller (M. L.), 10.
  - Well contamination at Quitman, McCallie, 10.
- *Hawaiian Islands.*
  - Fresh-water springs in the ocean, Hitchcock (C. H.), 11.
  - Geology of Hawaiian Islands, Branner, 6.
- *Lake Superior region.*
  - Sources of water supply in Wisconsin, Kirchoffer, 1.

Hydrology—Continued.
- *Lake Superior region*—Continued.
  - Underground waters of Wisconsin district, Schultz, 1.
  - Water resources of Minnesota, Hall (C. W.), 8.
- *Mexico.*
  - Aguas subterraneas de Amozoc, Ordoñez, 12.
  - Fisiographia, geologia, e hydrologia de la Paz, Angermann, 1.
  - Hidrologia interna de Queretaro, Villarello, 5.
  - Hidrologia subterranea de Queretaro, Villarello, 10.
- *Mississippi Valley region.*
  - Artesian wells in Iowa, Calvin, 9.
  - Deep wells as a source of water supply for Minneapolis, Winchell (N. H.), 27.
  - Geology of Oktibbeha County, Logan, 2.
  - Geology of the Hahatonka district, Scherer, 1.
  - Graydon sandstone and its mineral waters, Babcock and Minor, 1.
  - Hot springs of southern United States, Weed, 39.
  - Location of underground waters, Fuller (M. L.), 38.
  - Report on mineral waters, Bailey (E. H. S.), 1.
  - Soils of Wisconsin, Weidman, 3.
  - Sources of water supply in Wisconsin, Kirchoffer, 1.
  - Spring system of the Decaturville dome, Shepard, 4.
  - Springfield water supply, Park and Lyman, 1.
  - Springs of the Ozark region, Fuller (M. L.), 35.
  - Underground waters of Illinois, Leverett, 11.
  - Underground waters of Iowa, Norton, 3.
  - Underground waters of Minnesota, Hall (C. W.), 9.
  - Underground waters of Mississippi, Johnson (L. C.), 1.
  - Underground waters of Mississippi, Logan and Perkins, 1.
  - Underground waters of Missouri, Shepard, 5.
  - Underground waters of northern Arkansas, Purdue, 7.
  - Underground waters of Wisconsin district, Schultz, 1.
  - Water resources in northern Arkansas, Purdue, 9.
  - Water resources of Arkansas, Purdue, 5.
  - Water resources of Kentucky, Glenn, 5.
  - Water resources of Minnesota, Hall (C. W.), 8.
  - Water resources of Missouri, Shepard, 2.
  - Water resources of Tennessee, Glenn, 4.
  - Water resources of the Joplin district, Smith (W. S. T.), 4.

Hydrology—Continued.
Mississippi Valley region—Continued.
Water resources of the Mineral Point quadrangle, Grant (U. S.), 11.
Water resources of the Winslow quadrangle, Purdue, 8.
Water supplies at Waterloo, Norton, 4.
Water supplies of southeastern Kansas, Bartow, 1.
Water supply of the Ozark region, Adams (G. I.), 17.
New England and New York.
Artesian flows from unconfined sandy strata, Fuller (M. L.), 39.
Artesian water in crystalline rocks, Smith (G. O.), 20.
Artesian water supply at Ithaca, Whitney, 1.
Artesian well sections at Ithaca, Tarr, 5.
Hydrology of New York, Rafter, 1.
Results of resurvey of Long Island, Fuller and Veatch, 1.
Triassic rocks of the Connecticut Valley as a source of water supply, Fuller (M. L.), 18.
Underground waters of Connecticut, Gregory (H. E.), 1.
Underground waters of Maine, Bayley, 3.
Underground waters of Massachusetts and Rhode Island, Crosby, 14.
Underground waters of New Hampshire, Fuller (M. L.), 22.
Underground waters of New York, Weeks, 12.
Underground waters of Vermont, Perkins, 15.
Water powers of Maine, Pressey, 3.
Water resources of Connecticut, Gregory (H. E.), 2.
Water resources of Fort Ticonderoga quadrangle, Dale, 7.
Water resources of Maine, Bayley, 2.
Water resources of Massachusetts, Crosby and La Forge, 1.
Water resources of New Hampshire, Boutwell, 7.
Water resources of New York, Weeks, 11.
Water resources of Rhode Island, Crosby, 9.
Water resources of Taconic quadrangle, Taylor (F. B.), 5.
Water resources of the Catatonk area, Kindle, 8.
Water resources of the Portsmouth-York region, Smith (G. O.), 18.
Water resources of Vermont, Perkins, 8, 14.
Water resources of Watkins Glen quadrangle, Tarr, 8.
Water supply from Glacial gravels near Augusta, Smith (G. O.), 19.
Waters of a gravel-filled valley near Tully, Hollister, 3.

Hydrology—Continued.
New England and New York—Continued.
Wells of Triassic area of Connecticut Valley, Pynchon, 11.
Ohio Valley region.
Geology of Lower Carboniferous area of southern Indiana, Ashley, 2.
Medicinal properties and uses of Indiana mineral waters, Hessler, 1.
Mineral waters of Indiana, Blatchley, 3.
Natural features and economic development of drainage areas in Ohio, Flynn and Flynn, 1.
Ohio natural gas fields, Bownocker, 4.
Underground waters of Indiana, Leverett, 12.
Underground waters of Ohio, Leverett, 13.
Underground waters of Tennessee and Kentucky, Glenn, 11.
Underground waters of West Virginia, Fuller (M. L.), 26.
Water resources of Kentucky, Glenn, 5.
Water resources of Tennessee, Glenn, 4.
Pacific coast region.
Ellensburg folio, Smith (G. O.), 7.
Geology and water resources of central Oregon, Russell, 21.
Geology and water resources of east central Washington, Calkins, 3.
Underground waters of Washington, Landes, 4.
Water resources of Washington, Ruddy, 1.
Water storage in Truckee Basin, Taylor (L. H.), 1.
Rocky Mountain region.
Aladdin folio, Darton and O'Harra, 1.
Artesian basins in Idaho and Oregon, Russell, 9.
Doughty springs, a group of radium-bearing springs, Headden, 3.
Geology and water resources of Snake River Plains, Russell, 5.
Geology of Idaho and Oregon, Russell, 8.
Geology of hot springs of Colorado, Lakes, 103.
Hot and mineral springs of Routt County, Colo., Lakes, 97.
Hydrographic history of South Dakota, Todd (J. E.), 4.
Sundance folio, Darton, 26.
Water resources of State of Colorado, Fellows, 1.
Southwestern region.
Geological sketch of Hot Springs district, Weed, 13.
Geology and water resources of Oklahoma, Gould, 14.
Geology of Fort Apache region, Reagan, 3.
Report of superintendent of Hot Springs Reservation, Eisele, 1.
Silicic acid in waters of mountain streams, Headden, 2.

Hydrology—Continued.
  Southwestern region—Continued.
    Underground waters of Arizona, Skinner, 1.
  West Indies.
    Hydrology of Cuba, Fuller (M. L.), 19.
  General.
    Accuracy of stream measurements, Murphy, 1.
    Analysis of waters from Hot Springs, Haywood, 1.
    Bibliographic review and index of papers relating to underground waters published by the U. S. Geological Survey 1879–1904, Fuller (M. L.), 27.
    Classification of mineral waters, Peale, 1.
    Construction of so-called fountain and geyser springs, Fuller (M. L.), 33.
    Contributions to hydrology of eastern United States, Fuller (M. L.), 11.
    Débris fans of the arid region, Hilgard, 3.
    Drainage of ponds into drilled wells. Horton, 1.
    High plains and their utilization, Johnson (W. D.), 2.
    Hydrographic work of U. S. Geological Survey, Hollister, 2.
    Hydrologic work in the eastern United States, Fuller (M. L.), 30, 31.
    Hydrology of eastern United States, 1904, Fuller (M. L.), 17.
    Motions of underground waters, Slichter, 1.
    Occurrence of underground waters, Fuller (M. L.), 21.
    Organization of the Division of Hydrology, Fuller (M. L.), 11.
    Preliminary list of deep borings in United States, Darton, 5, 6.
    Rate of movement of underground waters, Slichter, 2.
    Record of deep well drilling for 1904, Fuller, Lines, and Veatch, 1.
    Record of deep well drilling for 1904, Veatch, 9.
    Two unusual types of artesian flow, Fuller (M. L.), 32.
    Underground waters of eastern United States, Fuller (M. L.), 20.
    Water resources of eastern and central States, Fuller (M. L.), 12.
    Well records, Lines, 1.

Idaho.
    Artesian basins in Idaho and Oregon, Russell, 9.
    Bellevue mining district, Lakes, 45.
    Border line between the Paleozoic and Mesozoic, Smith (J. P.), 1.
    Butte copper veins, Winchell (H. V.), 4.
    Cestraciont spine from Triassic of Idaho, Evans (H. M.), 1.
    Cœur d'Alene district, Ransome, 16.
    Complicated fault system, Bacorn, 1.

Idaho—Continued.
    Current notes on physiography, Davis (W. M.), 44.
    Facts about Thunder Mountain, Bell (R.), 5.
    Geological reconnaissance across the Bitterroot Range and Clearwater, Mountains, Lindgren, 21.
    Geological situation in the lava flow, with reference to the vegetation, Clearman, 1.
    Geology and mineral resources, Bell (R. N.), 5.
    Geology and water resources of Nez Perces County, Part I, Russell, 1.
    Geology and water resources of Nez Perces County, Part II, Russell, 2.
    Geology and water resources of Snake River Plains, Russell, 5.
    Geology of Idaho and Oregon, Russell, 8.
    Geology of Snaké River Plains, Russell, 7.
    Geology of Thunder Mountain and central Idaho, Bell (R.), 4.
    Glacial drift in the Dakotas, Montana, Idaho, and Washington, Upham, 37.
    Gold production of North America, Lindgren, 16.
    Idaho mining districts, Lakes, 18.
    Marine Trias of western America, Smith (J. P.), 5.
    Mining and milling in the Cœur d'Alene, Finlay (J. R.), 2.
    Mining industry of the Cœur d'Alenes, Finlay (J. R.), 1, 3.
    Mining industry of Idaho, Bell (R. N.), 3.
    Nampa folio, Lindgren and Drake, 1.
    Ore deposits of Cœur d'Alene district, Ransome, 17.
    Origin of fine gold of Snake River, Bell (R.), 3.
    Outline of Idaho geology and principal ore deposits of Lemhi and Custer counties, Idaho, Bell (R.), 1.
    Pseudomorphs and crystal cavities, Rowe, 4.
    Silver City folio, Lindgren and Drake, 2.
    Thunder Mountain and Mackay, Idaho, Bell (R.), 2.
    Thunder Mountain, L'Hame, 1.
    Thunder Mountain district, L'Hame, 2.

Illinois.
    Carboniferous ferns from Mazon Creek, Sellards, 3.
    Carboniferous fishes from central Western States, Eastman, 10.
    Carboniferous fish fauna of Mazon Creek, Eastman, 4.
    Carboniferous terrestrial arthropod fauna of Illinois, Melander, 1.
    Cement materials and industry of the United States, Eckel, 34.
    Chicago folio, Alden, 1.
    Clays of the United States, Ries, 6.

Iowa—Continued.
- Dolomites of eastern Iowa, Knight (N.), 5.
- Drift exposure in Tama County, Savage, 1.
- Fossils from the Hackberry group of Iowa, Webster, 2.
- Foraminiferal ooze in Coal Measures, Udden, 9.
- Gastropod from the Hackberry group of Iowa, Webster, 1.
- Geological age of certain gypsum deposits, Keyes, 24.
- Geological formations of Iowa, Calvin, 4.
- Geology and geological resources of Iowa, Calvin, 3, 7.
- Geology and underground water resources of the central Great Plains, Darton, 18.
- Geology of Benton County, Savage, 7.
- Geology of Cedar County, Norton, 1.
- Geology of Cherokee and Buena Vista counties, Macbride, 2.
- Geology of Chickasaw County, Calvin, 11.
- Geology of Clay and O'Brien counties, Macbride, 1.
- Geology of clays, Beyer and Williams, 2.
- Geology of Clinton County, Udden (Jon A.), 1.
- Geology of Emmet, Palo Alto, and Pocahontas counties, Macbride, 4.
- Geology of Fayette County, Savage, 8.
- Geology of Henry County, Savage, 2.
- Geology of Howard County, Calvin, 10.
- Geology of Jasper County, Williams (I. A.), 1.
- Geology of Jefferson County, Udden, 5.
- Geology of Kossuth, Hancock, and Winnebago counties, Macbride, 3.
- Geology of Louisa County, Udden, 2.
- Geology of Marion County, Miller (B. L.), 1.
- Geology of Mills and Fremont counties, Udden, 8.
- Geology of Mitchell County, Calvin, 12.
- Geology of Monroe County, Beyer and Young, 1.
- Geology of Page County, Calvin, 1.
- Geology of Pottawattamie County, Udden, 3.
- Geology of Tama County, Savage, 3.
- Geology of Wapello County, Leonard, 3.
- Geology of Webster County, Wilder, 3.
- Glacial drift of northern Iowa, Webster, 4.
- Gisements de minerals de zinc, Demaret, 1.
- Gypsum deposits in Iowa, Wilder, 6.
- Gypsum of central Iowa, Wilder, 4.
- Iowa's iron mine, Beyer, 2.
- Kinderhook faunal studies, Weller, 2.
- Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
- Location of underground waters, Fuller (M. L.), 38.

Iowa—Continued.
- Loess of Iowa City, Shimek, 2.
- Loess of southwestern Iowa, Willcox, 1.
- Mineral production of Iowa, Beyer, 1, 3, 4.
- Names of coals west of Mississippi River, Keyes, 19.
- New genus and species of Lower Carboniferous bryozoan, Whitfield, 8.
- Nileus vigilans from Elgin, Finch (G. E.), 2.
- Occurrence of gold and other mineral products in Iowa, Calvin, 2.
- Old channels of the Mississippi in Iowa, Leverett, 2.
- Paleontology of the Iowa Devonian, Webster, 3.
- Physiography of Iowa, Calvin, 13.
- Pleuroptyx in Iowa Coal Measures, Udden, 7.
- Portland-cement resources of Iowa, Bain, 15.
- Report of assistant State geologist, Leonard, 2.
- Report of assistant State geologist, Savage, 6.
- Report of State geologist, Calvin, 14.
- Report of State geologist, Wilder, 9.
- Rhizopods in Pella beds, Udden, 6.
- Smoking bluffs of the Missouri River region, Powers, 1.
- So-called alkali spots of drift-sheets, Willcox, 2.
- Southwestern Iowa coal fields, Keyes, 22.
- Technology of clays, Beyer and Williams, 1.
- Tenth annual report of State geologist, Calvin, 5.
- Terrace formation in Turkey River Valley, Finch (G. E.), 1.
- Tests of lithographic limestone of Mitchell County, Hoen, 1.
- Toledo lobe of Iowan drift, Savage, 4.
- Underground waters of Iowa, Norton, 3.
- Water supplies at Waterloo, Norton, 4.
- Western interior coal fields, Bain, 3.

Jurassic.

Alaska.
- Fossils and age of Yakutat formation, Ulrich, 4.
- Geology of Copper River region, Mendenhall, 8.
- Mesozoic section on Cook Inlet, Stanton and Martin, 1.
- Petroleum fields of Pacific coast, Martin (G. C.), 11.
- Stratigraphy and igneous rocks of Alaska, Emerson (B. K.), 6.

Atlantic coast region.
- Former extent of Newark system, Hobbs, 9.
- Geology of Coastal Plain formations, Shattuck, 5.
- Lodel Creek and Skippack Creek, Lyman, 2.

urassic—Continued.
- *Atlantic coast region*—Continued.
  - New York City folio, Merrill and others, 1.
  - Geologie von Canada, Haas, 2.
- *Great Basin region.*
  - Basin range structure of the Humboldt region, Louderback, 4.
  - Geology of Nevada, Spurr, 6.
  - Historical geology of Esmeralda County, Nev., Turner, 5.
  - Hurricane fault in southwestern Utah, Huntington and Goldthwait, 1.
- *Great Plains region.*
  - Aladdin folio, Darton and O'Harra, 1.
  - Atlantosaur and Titanotherium beds of Wyoming, Peck, 4.
  - Correlation of the formations of the Middle West, Hatcher, 21.
  - Edgemont folio, Darton and Smith, 1.
  - Geologische Streifzüge durch die Prärien und Felsengebirge Nordamerikas, Fraas, 2.
  - Geology and underground water resources of the central Great Plains, Darton, 18.
  - Hallopus, Baptanodon, and Atlantosaurus beds of Marsh, Williston, 25.
  - Hartville folio, Smith (W. S. T.), 1.
  - Jurassic dinosaurs, Gratacap, 5.
  - Morrison formation, Stanton, 8.
  - Newcastle folio, Darton, 14.
  - Oelrichs folio, Darton, 8.
  - Osteology of Haplocanthosaurus, Hatcher, 14.
  - Sundance folio, Darton, 26.
  - Triassic and Jurassic strata of the Black Hills, Hovey (E. O.), 13.
- *Greenland.*
  - Bidrag till nordöstra Grönlands geologi, Nathorst, 1.
  - Jurassic rocks of east Greenland, Skeat, 1.
- *New England and New York.*
  - Newark system of the Pomperaug Valley, Hobbs, 2.
- *Pacific coast region.*
  - Bragdon formation in California, Hershey, 21.
  - Geological section of the coast ranges, Osmont, 1.
  - Klamath Mountain section, Diller, 12.
  - Marine sediments of eastern Oregon, Washburne, 1.
  - San Luis folio, Fairbanks, 7.
- *Rocky Mountain region.*
  - Aladdin folio, Darton and O'Harra, 1.
  - Copper deposits of the Encampment district, Spencer (A. C.), 10.
  - Dinosaur beds of Grand River Valley of Colorado, Riggs and Farrington, 1.
  - Dinosaur beds of the Grand River Valley, Riggs, 1.
  - Forelimb and manus of Brontosaurus, Hatcher, 8.
  - Geology and ore deposits of Elkhorn mining district, Montana, Weed, 5.

Jurassic—Continued.
- *Rocky Mountain region*—Continued.
  - Geology of Black Hills, Darton, 1.
  - Geology of the Boulder district, Fenneman, 10.
  - Geology of the Hellgate and Big Blackfoot valleys, Winchell (N. H.), 25.
  - Geology of the Rico quadrangle, Cross (W.), 7.
  - Hallopus, Baptanodon, and Atlantosaurus beds of Marsh, Williston, 25.
  - Jurassic dinosaur deposits near Canyon City, Hatcher, 6.
  - Jurassic stratigraphy in Wyoming, Loomis, 2.
  - Jurassic stratigraphy on west side of Black Hills, Loomis, 3.
  - La Plata folio, Cross and Spencer, 1.
  - Morrison formation, Lee (W. T.), 1.
  - Stratigraphy of Black Hills, Bighorn Mountains, and Rocky Mountain front range, Darton, 16.
  - Sundance folio, Darton, 26.
  - Triassic and Jurassic strata of the Black Hills, Hovey (E. O.), 6.
- *Southwestern region.*
  - Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
  - Geology of the Jemez-Albuquerque region, Reagan, 1.
  - Jurassic horizon around the southern end of the Rocky Mountains, Keyes, 51.
  - Paleontology of the Malone Jurassic formation, Cragin, 2.
  - Stratigraphic notes on Malone Mountain, Stanton, 7.

Kansas.
- Age of Lansing skeleton, Wright (G. F.), 4.
- Age of Red Beds, Adams (G. I.), 1.
- Age of the Red Beds, Beede, 3.
- Americus limestone, Smith (A. J.), 1.
- Analyses of Mississippian limestone from the Atchison prospect well, Porter (F. B.), 1.
- Antiquity of fossil man of Lansing, Upham, 18.
- Arrow-head found with bones of Bison occidentalis Lucas in western Kansas, Williston, 5.
- Atchison diamond-drill prospect hole, Langworthy, 1.
- Carboniferous fishes from central Western States, Eastman, 10.
- Carboniferous invertebrates, Beede, 1.
- Carboniferous rock system of eastern Kansas, Wooster, 1.
- Carboniferous rocks of Kansas section, Adams, Girty, and White, 1.
- Cement materials and industry of the United States, Eckel, 34.
- Clay industries of Independence quadrangle, Schrader and Haworth, 2.
- Coal fields of Kansas, Crane, 4.

Kansas—Continued.
Coal Measures faunal studies, Beede and Rogers, 1.
Coal Measures faunal studies, II, Beede, 6.
Composition of gas from a well at Dexter, McFarland, 1.
Concretions of Ottawa County, Bell (W. T.), 1.
Corrading action of river water during floods, Morscher, 1.
Cottonwood Falls folio, Prosser and Beede, 1.
Cretaceous fishes, Williston, 1.
Current notes on physiography, Davis (W. M.), 40.
Cyclus from Coal Measures, Rogers, 3.
Dakota Cretaceous of Kansas and Nebraska, Gould, 5.
Dakota sandstone in Washington County, Charles, 1.
Dexter nitrogen gas well, Haworth and McFarland, 1.
Economic geology of Iola and vicinity, Grimsley, 2.
Economic geology of the Iola quadrangle, Adams, Haworth, and Crane, 1.
Fauna of the Mentor, Jones (A. W.), 2.
Flint hills of Kansas, Mead (J. R.), 1.
Fossil bison of Kansas, McClung, 1.
Fossil forest in Jackson County [Kansas], Shattuck, 1.
Fossil human remains found near Lansing, Holmes, 1.
Fossil insects in Permian of Kansas, Sellards, 7.
Fossil man from Kansas, Williston, 12.
Fossil man of Lansing, Pearson (K.), 1.
Fossil man of Lansing, Upham, 10.
Fossil man of Lansing, Williston, 18.
Fossil plants from Kansas, Hollick, 9.
Fossil plants from Upper Carboniferous and Permian formations of Kansas, White (D.), 10.
Fossil plants in the Permian, Sellards, 2.
Fossil plants of Onaga, Crevecœur, 1.
Fossils from the Red Beds, Gould, 1.
Galena-Joplin lead and zinc district, Haworth, 1.
Ganoid- und Knochen-fische aus der Kreide formation von Kansas, Loomis, 1.
Geologic relations of human relics of Lansing, Calvin, 8.
Geologic relations of the human relics of Lansing, Chamberlin (T. C.), 5.
Geological age of certain gypsum deposits, Keyes, 24.
Geology and mining interests of Kansas, Haworth, 3.
Geology and underground water resources of the central Great Plains, Darton, 18.

Kansas—Continued
Geology of Lyon County, Smith (A. J.), 3.
Gisements de minerals de zinc, Demaret, 1.
Gold in Kansas, Lovewell, 2.
Gold in Kansas shales, Lovewell, 1.
Gypsum deposits in Kansas, Grimsley, 5.
High plains and their utilization, Johnson (W. D.), 1.
Invertebrate fossils from Carboniferous section of Kansas, Girty, 4.
Kansas coal mines of the Missouri Valley, Crane, 2.
Kansas coal mining, Crane, 1.
Kansas mines and minerals, Grimsley, 1.
Kansas-Oklahoma-Texas gypsum hills, Gould, 4.
Kansas petroleum, Bartow and McCollum, 1.
Kansas River flood, Haworth, 5.
Lansing deposit not loess, Shimek, 12.
Lansing man, Williston, 24.
Lansing skeleton, Owen, 2.
Lansing skeleton, Winchell (N. H.), 11.
Lead and zinc deposits of the Joplin district, Smith (W. S. T.), 2.
Lyon County geology, Smith (A. J.), 2.
Man in Kansas during the Iowan stage of the Glacial period, Upham, 9.
Man in the Ice Age at Lansing, Kans., and Little Falls, Minn., Upham, 8.
Meteorite from Admire, Lyon County, Merrill (G. P.), 4.
Meteorites of Kansas, Farrington, 11.
Meteorites of northwestern Kansas, Farrington, 8.
Missourian and Permo-Carboniferous fish fauna of Kansas and Nebraska, Eastman and Barbour, 1.
Names of coals west of Mississippi River, Keyes, 19.
New fossils from Upper Carboniferous of Kansas, Beede, 4.
New meteorite, Farrington, 7.
New turtle from the Kansas Cretaceous, Williston, 3.
Notes on Kansas geology, Wooster, 2.
Oil and gas fields of western interior and Gulf coasts, Adams (G. I.), 2.
Oil and gas in Kansas, Haworth, 4.
Oil and gas of Independence quadrangle, Schrader and Haworth, 1.
Oil, gas, glass, etc., in Kansas, Grimsley, 1.
Origin of gypsum deposits, Sherwin, 2.
Ottawa gas wells, Yates (J. A.), 1.
Permian formations of Kansas, Prosser, 14.
Permian Xiphosuran from Kansas, Beecher, 10.
Petroleum and natural gas, Haworth, 2.
Physiographic divisions of Kansas, Adams (G. I.), 5, 9.

Kansas—Continued.
- Pleistocene geology of the Concannon farm, near Lansing, Winchell (N. H.), 14.
- Portland-cement resources of the Independence quadrangle, Haworth and Schrader, 1.
- Pottawattamie and Douglas formations, Rogers, 1.
- Primitive man in the Ice Age, Upham, 12.
- Protostega gigas and other Cretaceous reptiles, Sternberg, 5.
- Reading blue limestone, Smith (A. J.), 4.
- Remarkable slab of crinoids, Hovey (E. O.), 14.
- Report on mineral waters, Bailey (E. H. S.), 1.
- Restoration of Dolichorhyncops osborni, Williston, 9.
- Revised classification of upper Paleozoic formations of Kansas, Prosser, 7.
- Skull of Nyctodactylus, Williston, 6.
- Snoutfishes of Kansas, Hay, 3, 11.
- Southern extension of the Marion and Wellington formations, Gould, 6.
- Stratigraphic relations of Red Beds, Adams (G. I.), 11.
- Stratigraphy of Kansas Permian, Beede and Sellards, 1.
- Studies in the Mentor beds, Jones (A. W.), 1.
- Surface deposits of Missouri and Kansas, Broadhead, 7.
- Tæniopteris of the Permian, Sellards, 1.
- Teleosts of the upper Cretaceous, Stewart, 1.
- Tertiary springs of Kansas and Oklahoma, Gould, 3.
- Tertiary terrane new in Kansas geology, Adams (G. I.), 8.
- Tests for gold and silver in shales from western Kansas, Lindgren, 7, 8.
- Uintacrinus, Springer (F.), 2.
- Valley loess and fossil man of Lansing, Upham, 14.
- Variation of spiralia in Seminula argentia (Shepard) Hall, Beede, 5, 7.
- Water resources of the Joplin district, Smith (W. S. T.), 4.
- Western interior coal field, Bain, 3.
- Winged reptiles, Williston, 7.

Kentucky.
- Age of the Wise and Harlan formations of southwestern Virginia, White (D.), 23.
- Asphalt rock in Kentucky, Burk, 2.
- Barboursville oil field, McCallie, 7.
- Bath Furnace aerolite, Ward (H. A.), 12.
- Bath Furnace meteorite, Ward (H. A.), 5.
- Bath Furnace meteoric fall, Miller (A. M.), 3.

Kentucky—Continued.
- Big Stone Gap coal field, Pultz, 1.
- Carboniferous of the Appalachian basin, Stevenson (J. J.), 6.
- Cincinnati anticline in southern Kentucky, Foerste, 3.
- Cincinnati geanticline, Foerste, 10.
- Classification of the Ordovician rocks of Ohio and Indiana, Foerste, 12.
- Clays of the United States, Ries, 6.
- Colossal cavern, Hovey (H. C.), 2.
- Contributions to Devonian paleontology, Williams and Kindle, 1.
- Cumberland Gap coal field, Ashley, 3, 4.
- Drainage modifications in Ohio, West Virginia, and Kentucky, Tight, 4.
- Eastern interior coal field, Ashley, 1.
- Fluorspar and zinc mines of Kentucky, Harwood, 1.
- Fluorspar deposits of Kentucky-Illinois districts, Bain, 12.
- Fluorspar mines of Kentucky and Illinois, Burk, 1.
- Fossiliferous sandstone dikes in Eocene of Tennessee and Kentucky, Glenn, 8.
- Geologic structure of region around Middlesboro, Ky., Ashley, 5.
- Gisements de minerais de zinc, Demaret, 1.
- Grottes des États-unis, Le Couppey de la Forest, 1.
- Jellico coal field, Evans (N. N.), 2.
- Lead and zinc bearing rocks of Kentucky, Miller (A. M.), 4.
- Lead, zinc, and fluorspar deposits of western Kentucky, Smith (W. S. T.), 3.
- Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich, 8.
- Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich and Smith, 1.
- Lithographic stone deposits of eastern Kentucky, Ulrich, 3.
- Lower Carboniferous of Appalachian basin, Stevenson (J. J.), 4.
- Meteorite from Mount Vernon, Merrill (G. P.), 7.
- Mount Vernon meteorite, Tassin, 5.
- New meteorite from Kentucky, Miller (A. M.), 2.
- Norton coals of Big Sandy basin, Althouse, 1.
- Oil and gas sands of Kentucky, Hoeing, 1.
- Ordovician rocks of Kentucky and their bryozoa, Nickles, 6.
- Southern Appalachian coal field, Hayes (C. W.), 7.
- Report of division of chemistry, Peter, 1.
- Report on lands leased for oil and gas near Cannel City, Lane, 19.
- Richmond group of Cincinnati anticline, Foerste, 8.

Kentucky—Continued.
- Silurian and Devonian limestone, Foerste, 1.
- Silurian and Devonian limestones of western Tennessee, Foerste, 7.
- Underground waters of Tennessee and Kentucky, Glenn, 11.
- Water resources of Kentucky, Glenn, 5.
- Water resources of the Middlesboro-Harlan region, Ashley, 6.
- Zinc in Crittenden County, Wheeler (G. D.), 1.

Labrador.
- Instances of moderate glacial erosion, Tarr, 9.

Louisiana.
- Accumulation of petroleum, Hayes (C. W.), 8.
- Age of Alabama white limestone, Casey, 2.
- Cement materials and industry of the United States, Eckel, 34.
- Eocene Eulimidæ, Casey, 3.
- Geography and geology of Sabine River, Veatch, 2.
- Geological horizon of petroleum, Fishback, 1.
- Geology along the Ouachita, Veatch, 3.
- Geology of Mississippi embayment, Harris, 2.
- Hills of Louisiana north of V., S. & P. Railroad, Lerch, 1.
- Hills of Louisiana south of V., S. and P. Railroad, Lerch, 2.
- Jackson outcrops on Red River, Casey, 1.
- Oil fields of Texas-Louisiana Gulf coastal plain, Hayes (C. W.), 13.
- Oil fields of Texas-Louisiana Gulf coastal plain, Hayes and Kennedy, 1.
- Oil fields of the Texas-Louisiana Gulf coast, Fenneman, 8.
- Oil in Louisiana, Harris, 4.
- Oligocene of western Europe and southern United States, Maury, 1.
- Origin of natural mounds, Veatch, 10.
- Prairie mounds of Louisiana, Hilgard, 6.
- Preliminary report upon bluff and Mississippi alluvial lands of Louisiana, Clendenin, 2.
- Preliminary report upon Florida parishes of east Louisiana, Clendenin, 1.
- Salines of north Louisiana, Veatch, 1.
- Southern oil fields, Hager, 1.
- Subterranean waters of Louisiana, Harris, 3.
- Sulphur deposits of Calcasieu Parish, Kerr, 1.
- Tertiary of Sabine River, Dumble, 10.
- Tidal gage work in Louisiana, Harris, 9.
- Underground waters of Louisiana, Harris, 6.
- Underground waters of Louisiana and Arkansas, Veatch, 7, 8.

Louisiana—Continued.
- Underground waters of southern Louisiana, Harris, 8.
- Volcanic origin of oil, Coste, 4.
- Water supplies in Louisiana, Fuller (M. L.), 10.

Maine.
- Ames Knob, North Haven, Willis, 12.
- Andesites of the Aroostook volcanic area, Gregory (H. E.), 1.
- Andover meteorite, Ward (H. A.), 6.
- Apatite from Minot, Wolff and Palache, 1.
- Artesian water in crystalline rocks, Smith (G. O.), 20.
- Blazing beach, Penhallow, 7.
- Clays of the United States, Ries, 6.
- Composition and occurrence of pollucite, Wells, 2.
- Description of four meteorites, Ward (H. A.), 3.
- Geological study of the Fox Islands, Smith (G. O.), 2.
- Geology of Perry basin, Smith and White, 1.
- Geology of Perry basin, White (D.), 18.
- Glacial potholes in Maine, Manning, 1.
- Granite industry of Penobscot Bay quadrangle, Smith (G. O.), 17.
- Mineral resources, Lee (L. A.), 1.
- Minerals at Haddam, Martin (D. S.), 1.
- Molybdenite deposit in eastern Maine, Smith (G. O.), 16.
- Quartz veins in Maine and Vermont, Smith (G. O.), 14.
- Shells of the marl deposits of Aroostook County, Nylander, 1.
- Slate investigations during 1904, Dale, 8.
- Water powers of Maine, Pressey, 3.
- Water resources of Maine, Bayley, 2.
- Underground waters of Maine, Bayley, 3.
- Water resources of the Portsmouth-York region, Smith (G. O.), 18.
- Water supply from Glacial gravels near Augusta, Smith (G. O.), 19.

Marcus Island.
- Monograph of Marcus Island, Bryan, 1.

Maryland.
- Addition to coral fauna of Aquia Eocene formation of Maryland, Vaughan, 14.
- Basic rocks of northeastern Maryland, Leonard, 1.
- Bituminous coal field of Maryland, White (D.), 7.
- Buried cypress forests, Bibbins, 3.
- Cement materials and industry of the United States, Eckel, 34.
- Clays of Maryland, Ries, 5.
- Clays of the United States, Ries, 6.
- Cockeysville marble, Mathews and Miller, 1.

Maryland—Continued.
Copper deposits of Appalachian States, Weed, 17.
Correlation of Coal Measures of Maryland, Clark and Martin, 5.
Correlation of formations and members [of the Maryland coal district], Clark and Martin, 6.
Correlation of Piedmont formations, Mathews, 6.
Correlation of the Potomac formation, Ward (L. F.), 3.
Devonic and Ontaric formations of Maryland, Schuchert, 7.
Distribution and character of Maryland coal beds, Clark, Martin, and Rutledge, 1.
Eocene Arthropoda, Ulrich, 1.
Eocene Bryozoa, Ulrich, 2.
Eocene Cœlenterata, Vaughan, 1.
Eocene deposits of Maryland, Clark and Martin, 1.
Eocene Echinodermata, Clark and Martin, 4.
Eocene Mollusca, Clark and Martin, 2.
Eocene Molluscoidea (Brachipoda), Clark and Martin, 3.
Eocene Pisces, Eastman, 1.
Eocene Plantæ, Hollick, 3.
Eocene Protozoa, Bagg, 1.
Fault phenomena near Glen Echo, Gilbert, 25.
First discovery of fossil seals in America, True (F. W.), 2.
Fossil grasses and sedges, Berry, 10.
Geology of Coastal Plain formations, Shattuck, 5.
Geology of crystalline rocks of Cecil County, Bascom, 1.
Geology of Garrett County, Martin (G. C.), 1.
Geology of Potomac group in middle Atlantic slope, Clark and Bibbins, 1.
Geology of the Maryland coal district, Martin, 16.
Gold veins near Great Falls, Weed, 35.
Lower Carboniferous of Appalachian basin, Stevenson (J. J.), 4.
Maryland Geological Survey, volume 4, Clark (W. B.), 1.
Matawan formation, Clark (W. B.), 5.
Mineral resources of Cecil County, Mathews, 1.
Mineral resources of Garrett County, Martin (G. C.), 2.
Miocene deposits of Maryland, Clark (W. B.), 6.
Miocene deposits of Maryland, Shattuck, 10.
Miocene formation of Maryland, Shattuck, 6.
Names for the formations of the Ohio Coal Measures, Prosser, 4.
Niagara period near Cumberland, Uhler, 1.
Occurrence of zoisite and thulite, Bibbins, 1.

Maryland—Continued.
Paleontology of the Maryland Miocene deposits, Angiospermæ, Hollick, 10.
Paleontology of the Maryland Miocene deposits, Anthozoa, Vaughan, 19.
Paleontology of the Maryland Miocene deposits, Brachiopoda, Martin (G. C.), 6.
Paleontology of the Maryland Miocene deposits, Bryozoa, Ulrich and Bassler, 4.
Paleontology of the Maryland Miocene deposits, Echinodermata, Clark (W. B.), 7.
Paleontology of the Maryland Miocene deposits, Foraminifera, Bagg, 6.
Paleontology of the Maryland Miocene deposits, Hydrozoa, Ulrich, 6.
Paleontology of the Maryland Miocene deposits, Malacostraca and Cirrepedia, Martin (G. C.), 4.
Paleontology of the Maryland Miocene deposits, Mammalia, Aves, Reptilia, Case, 9.
Paleontology of the Maryland Miocene deposits, Mollusca, except Pelecypoda, Martin (G. C.), 5.
Paleontology of the Maryland Miocene deposits, Ostracoda, Ulrich and Bassler, 3.
Paleontology of the Maryland Miocene deposits, Pelecypoda, Glenn, 6.
Paleontology of the Maryland Miocene deposits, Pisces, Eastman, 18.
Paleontology of the Maryland Miocene deposits, Radiolaria, Martin (G. C.), 8.
Paleontology of the Maryland Miocene deposits, Thallophyta-Diatomaceæ, Boyer, 1.
Paleontology of the Maryland Miocene deposits, Vermes, Martin (G. C.), 7.
Paleozoic Appalachia, Willis, 1.
Paleozoic formations of Allegany County, Prosser, 3.
Paleozoic ostracods from Maryland, Jones (T. R.), 4.
Physical features of Cecil County, Shattuck, 3.
Physiographic features of Maryland, Abbe, 1.
Physiography of Cecil County, Shattuck, 4.
Physiography of Garrett County, Abbe, 2.
Pleistocene problem in Maryland, Shattuck, 7.
Potomac group in Maryland, Clark and Bibbins, 2.
Position and nature of Maryland cycads, Bibbins, 2.
Recent work in Piedmont area of northern Maryland, Mathews, 2.
Relations of Maryland Miocene, Dall, 14.

Maryland—Continued.
Report on various collections of fossil plants from the older Potomac of Virginia and Maryland, Fontaine, 5.
Reports on Cecil County, Clark (W. B.), 2.
Reports on Garrett County, Clark (W. B.), 3.
Romney formation of Maryland, Prosser, 12.
Slate investigations during 1904, Dale, 8.
Structure of Piedmont Plateau, Mathews, 5.
Systematic paleontology, Eocene Reptilia, Case, 1.
Types of Maryland Tertiary Mollusca in British Museum, Newton, 1.
Underground waters of Maryland, Darton and Fuller, 1.
Washington folio, Darton and Keith, 1.
Water resources of Frostburg and Flintstone quadrangles, Martin (G. C.), 10.
Water resources of Pawpaw and Hancock quadrangles, Stose and Martin, 1.
Water resources of the Accident and Grantsville quadrangles, Martin (G. C.), 9.

Massachusetts.
Alkalisyenit von Beverly, Wright (F. E.), 3.
Babingtonite from Somerville, Palache and Fraprie, 1.
Building stones of Boston, Crosby and Loughlin, 1.
Calcite-prehnite cement rock from the Holyoke Range, Emerson (B. K.), 6.
Cambrian and pre-Cambrian of Hoosac Mountains, Wolff, 3.
Cambrian deposits of North Attleboro, Gorham, 1.
Cement materials and industry of the United States, Eckel, 34.
Changes of level at Cape Ann, Tarr, 3.
Clays of Boston Basin, Brown (R. M.), 1.
Clays of the United States, Ries, 6.
Concretions from the Champlain clays, Sheldon, 1.
Contributions from the mineralogic laboratory, Whitlock, 4.
Cuttyhunk Island, Gulliver, 2.
Delta plain at Andover, Mills (F. S.), 2.
Delta plains of the Nashua Valley, Crosby, 8.
Elevated beaches of Cape Ann, Woodworth, 5.
Erosion by flying sand on beaches of Cape Cod, Julien, 6.
Formation of natural bridges, Cleland, 4.
Fossil crabs of the Gay Head Miocene, Cushman, 6.
Fossils from Sankaty Head, Cushman, 5.

Massachusetts—Continued.
Geologic features within the 8,000-acre grant, Sheldon and Sheldon, 1.
Geological and botanical notes, Cape Cod and Chappaquidick Island, Hollick, 4.
Geological history of Charles River, Clapp, 1.
Geology of central Cape Cod, Julien, 3.
Geology of Charles River estuary, Crosby, 7.
Geology of Weston aqueduct, Crosby, 12.
Geology of Worcester, Perry and Emerson, 1.
Glacial and post-Glacial history of the Hudson and Champlain valleys, Peet, 1.
Glacial cirques and rock terraces on Mount Toby, Emerson (B. K.), 4.
Glaciation of the Berkshire Hills, Taylor (F. B.), 4.
Gravel deposits in Glacial Lake Charles, Clapp, 2.
Hematite deposits of New York, Eckel, 30.
Holyokeite from the Trias of Massachusetts, Emerson (B. K.), 3.
Ice retreat in Glacial Lake Neponset, Fuller (M. L.), 8.
Igneous rocks of Neponset Valley, Crosby, 15.
Instances of moderate glacial erosion, Tarr, 9.
Island tying, Gulliver, 5.
Landslides of Mount Greylock and Briggsville, Massachusetts, Cleland, 1.
Lead and silver mines, Newbury, Hovey (H. C.), 1.
Limonite deposits of New York and New England, Eckel, 36.
Medford dike area, Wilson (A. W. G.), 1.
Micaceous cross-banding of strata, Woodworth, 1.
Mineralogical notes, Warren, 1.
Miocene barnacles from Gay Head, Cushman, 4.
Nantucket shore lines, Gulliver, 3.
New habit for chalcopyrite, Richards (R. W.), 1.
Physical geography and geology of Springfield, Orr, 1.
Physical geography, etc., of Essex County, Massachusetts, Sears, 1.
Pleistocene fauna of Sankaty Head, Cushman, 3.
Pleistocene formations of Sankaty Head, Nantucket, Wilson (J. H.), 1.
Plumose diabase and palagonite from Holyoke trap sheet, Emerson (B. K.), 9.
Pre-Pleistocene deposits at Third Cliff, Bowman (I.), 3.
Recessional ice borders in Berkshire County, Taylor (F. B.), 3.

Massachusetts—Continued.
Fossils from Sankaty Head, Cushman, 5.
Reconnaissance of the Elizabeth Islands, Hollick, 1.
Representatives of pre-Wisconsin till, Fuller (M. L.), 1.
Rocks of the Weston aqueduct, Warren, 2.
Sand plains of Glacial Lake Sudbury, Goldthwait, 1.
Structural relations of amygdaloidal melaphyre, Burr, 1.
Structure and composition of delta plains, Crosby, 11.
Study of hard-packed sand and gravel, Crosby, 5.
Sudbury basin shore lines, Gulliver, 6.
Taconic physiography, Dale, 9.
Terraces of Westfield River, Davis (W. M.), 28.
Tertiary fauna from Chappaquiddick Island, Brown (T. C.), 1.
Tidal scour in harbors, Frizell, 1.
Tidal scour in harbors, Hodgdon, 1.
Triassic rocks of the Connecticut Valley as a source of water supply, Fuller (M. L.), 18.
Underground waters of Massachusetts and Rhode Island, Crosby, 14.
Water resources of Taconic quadrangle, Taylor (F. B.), 5.
Water resources of Massachusetts, Crosby and La Forge, 1.
Water supply from delta type of sand plain, Crosby, 13.
Wells of Triassic area of Connecticut Valley, Pynchon, 11.

Mexico.
Aguas subterraneas de Amozoc, Ordóñez, 12.
Análisis y clasificación de granate, Villarello, 7.
Análisis y clasificación de un granate de Pihuamo, Villarello, 2.
Apuntes relativos al mineral de Taxco de Alarcon, Salazar, 1.
Area cubierta por la ceniza del volcan de Santa Maria, Böse, 6.
Arizpe meteorite, Wuensch, 1.
Bacubirito meteorite, Aguilera, 4.
Bacubirito, or the great meteorite of Sinaloa, Ward (H. A.), 4.
Barrancas de Las Minas, Ordóñez, 16.
Bibliography of Mexican geology and mining, Aguilar y Santillán, 1.
Caliche of southern Arizona, Blake (W. P.), 4.
Cananea copper deposits, Weed, 12.
Cananea ore deposits, Weed, 23.
Cananea revisited, Hill (R. T.), 12.
Canteras de San Lorenzo Totolinga, Lazo and Ordóñez, 1.
Casas Grandes meteorite, Tassin, 3.
Coal fields of Las Esperanzas, Ludlow, 1.
Coal mines at Las Esperanzas, Ries, 9.

Mexico—Continued.
Cobalt au Mexique, Caballero, 1.
Condiciónes tectónicas de la Republica Mexicana, Aguilera, 2.
Coking coal in Chihuahua, Phillips (W. B.), 13.
Copper deposits at San Jose, Kemp, 32.
Copper deposits in Sinaloa and Sonora, Rickard (F.), 2.
Crateres de Xico, Ordóñez, 17.
Cretaceous of Obispo Canyon, Dumble, 4.
Criadero de fierro del Cerro de Mercado, Durango, Rangel, 1.
Criaderòs argentiferos, Flores, 1.
Criaderos cupro-argentiferos en Tapalpa, Villafaña, 1.
Criaderos de fierro de la hacienda de Vaquerias, Villarello and Böse, 1.
Criaderos de mercurio de Chiquilistan, Villarello, 6.
Criaderos de petroleo de pichucalco, Alcala, 1.
Desarrollo de la geología en México, Aguilera, 5.
Description of four meteorites, Ward (H. A.), 3.
Distribucion geográfica y geológica de los criaderos minerales, Aguilera, 1.
Drainage of Valley of Mexico, Emmons (S. F.), 13.
Éruptions du Volcan de Colima, Ordóñez, 10.
Eruptions of Colima, Arreola, 1.
Estado de Tabasco, Laguerenne, 1.
Faune marine du Trias Supérieur de Zacatecas, Burckhardt and Scalia, 1.
Fierro de Tatatila, Vera Cruz, Capilla, 1.
Fierro meteorico de Bacubirito, Angermann, 3.
Fisiographia, geologia e hidrologia de La Paz, Angermann, 1.
Formation des montagnes, Burckhardt, 1.
Gems and precious stones of Mexico, Halse, 3.
Gems and precious stones of Mexico, Kunz, 4.
Genesis de los yacimientos mercuriales de Palomas, Villarello, 1.
Geographic and geologic features, and their relation to the mineral products of Mexico, Hill (R. T.), 4.
Geographic and geologic features of Mexico, Hill (R. T.), 2.
Geographical and geological distribution of mineral deposits of Mexico, Aguilera, 3.
Geología de Chiapas y Tabasco, Böse, 7.
Geología del valle de Chilpancingo, Ordóñez and Böse, 1.
Geological and topographical features of city of Monterey, Wittman, 1.
Geological section in Guerrero, Hall (C. E.), 1.
Geology of Mexico, Sebbin, 1.

Mexico—Continued.
Geology of nepheline syenite area at San José, Tamaulipas, Finlay (G. I.), 7.
Geology of San José district, Finlay (G. I.), 8.
Geology of San Pedro district, Finlay (G. I.), 5.
Geology of Santo Domingo placer fields, Hill (R. T.), 15.
Geology of Sonora, Merrill (F. J. H.), 7.
Geology of the Cananeas, Mathez, 1.
Geology of western Mexico, Farrington, 13.
Gold mines of the San Pedro district, Laird, 1.
Gold production of North America, Lindgren, 16.
Guanajuato mining district, Henrich, 1.
Guanajuato mining district, Hill (R. T.), 14.
Hydrologia interna de Queretaro, Villarello, 5.
Hidrologia subterranea de Queretaro, Villarello, 10.
Hostotipaquillo district, Cummings, 1.
In San Cristobal gefallene Asche, Schottler, 1.
Independencia de los volcanes de grietas preexistentes, Böse, 1.
La industria minera, Ordóñez, 2.
Instituto Geologica de México, Guild, 2.
Jurassic fossils from Durango, Johnson (D. W.), 3.
Kupfererzlagerstätte in Nieder-Californien, Krusch, 1.
Latest eruption of Colima volcano, Ishikawa, 1.
Ligeros datos sobre los criaderos de Peñoles, Hijar, 1.
"Los Reyes" gold mines, Smith (A. H.), 1.
Meteoreisen-Studien, Cohen, 4.
Meteoreisen von Cuernavaca und Iredell, Cohen, 8.
Meteoreisen von Ranchito und Casas Grandes, Cohen, 5.
Mina Santa Francisca, Cook (E. H.), 1.
Minas "Santiago y Anexas," Villarello, 9.
Mineral asbestiforme, Villarello, 4.
Mineral de Angangueo, Ordóñez, 11.
Mineral zone of Santa Maria del Rio, Manzano, 1.
Mineralogical notes, Headden, 4.
Mines and minerals of Guanajuato, Blake (W. P.), 7.
Mines in the States of Chihuahua, Sinaloa, and Sonora, Weed, 8.
Mines of Santa Eulalia, Aiken, 1.
Mining district of Pachuca, Ordoñez, 6.
Mining in lower California, Lowry, 1.
Mining industry of Pachuca, Ordoñez, 3.
Moctezuma district, Clere, 1.

Mexico—Continued.
Natürlicher Koks in den Santa Clara Kohlenfeldern, Sonora, Ochsenius, 1.
Nauhcampatepetl ó Cofre de Perote, Ordoñez, 18.
Nephelite syenite area of San José, Finlay and Kemp, 1.
Observaciones geologicas al Citlaltepetl, Angermann, 4.
Occurrence of selenium with pyrite, Pearce, 1.
Onyx-marble deposits of Jimulco, Ordoñez, 4.
Ore deposits of Cananea, Austin, 3.
Ore deposits of Cananea, Hill (R. T.), 11.
Ore deposits of La Cananea, Steel, 1.
Origen de los temblores de Zanatepec, Böse, 5.
Oyster shells in volcanic deposits, Dumble, 5.
Paleozoico en México, Angermann, 2.
Physical geography of Mexico, Hill, 19.
Profil durch den Ostabfall der Sierra Madre Oriental, Böse, 2.
Ramosite not a mineral, Luquer, 3.
Recent vertebrate paleontology, Osborn, 46.
Regiones de temblores en México, Böse, 4.
Reseña geológica del Desagüe del Valle de México, Villada, 1.
Las rhyolitas, Ordoñez, 1.
Rocas de Chiapas y Tabasco, Ordoñez, 14.
Roche basaltique de la Sierra Verde, Kroustchoff, 1.
Rodeo meteorite, Farrington, 16.
Sahcab de Yucatan, Ordoñez, 8.
Sahuayacan district, Bagg, 8.
Sahuayacan mining district, Treadwell, 1.
Sain Alto tin deposits, Nevius, 3.
Santa Eulalia district, Hill (R. T.), 10.
Santa Eulalia mines, Lakes, 54.
Santa Eulalia mining district, Argall (P.), 1.
Santa Eulalia ore deposits, Argall (P.), 2.
Sierra Madre of the State of Chihuahua, Hewett, 1.
Section across the Sierra Madre Occidental of Chihuahua and Sinaloa, Weed, 9.
Sierra Madre of the State of Chihuahua, Hovey (E. O.), 43.
Sierra Mojada and its ore deposits, Emmons (S. F.), 8.
Sierra Mojada and its ore deposits, Malcolmson, 1.
Silver-bearing veins of Mexico, Halse, 1, 4.
Silver-lead mines of Santa Eulalia, Cahill, 1.
Structure of ore-bearing veins in Mexico, Halse, 2.

Mexico—Continued.
- Temblor en Guerrero, Böse and Angermann, 1.
- Teoria quimica para explicar la formación del petroleo de Aragon, Villarello, 3.
- Topographie und Geologie von Mexico, Felix and Lenk, 1.
- Trip to Chihuahua, Lakes, 51.
- Upland placers of La Cienega, Sonora, Hill (R. T.), 7.
- Value of ores in Mexico, Emmons (N. H.), 1.
- Vanadio de Charcas, Caballero, 2.
- Volcan de Tacana, Böse, 3.
- Volcanes de Zacapu, Ordoñez, 9.
- Vulkanische Asche, Schmidt, 1.
- Western Sierra Madre of the State of Chihuahua, Hovey, 47.
- Wollastonite rock mass, Collins (H. F.), 1.
- Los Xalapazcos del Estado de Puebla, Ordoñez, 15.
- Xinantacatl ou volcan Nevado de Toluca, Ordoñez, 7.
- Yaqui River country of Sonora, Bancroft, 1.

Michigan.
- Alabaster area, Gregory (W. M.), 3.
- Artesian flows from unconfined sandy strata, Fuller (M. L.), 39.
- Asphalt in Delta County, Lane, 6.
- Cement materials and industry of the United States, Eckel, 34.
- Clays and shales of Michigan, Ries, 1.
- Clays of the United States, Ries, 6.
- Coal formation of Bay County, Cooper (W. F.), 3.
- Coal of Michigan, Lane, 14.
- Comment on report of special committee on Lake Superior, Lane, 47.
- Copper mines of Lake Superior, Rickard (T. A.), 4, 16.
- Copper mining in upper Michigan, Jackson (J. F.), 1.
- Deep borings for oil and gas, Lane, 46.
- Deep wells and prospects for oil and gas, Lane, 10.
- Delta of St. Clair River, Cole (L. J.), 1.
- Drainage of ponds into drilled wells, Horton, 1.
- Drumlin areas in Michigan, Russell, 24.
- Drumlins of the Grand Traverse region, Leverett, 14.
- Economic geology of Michigan, Lane, 5, 8, 26.
- Eisenerzlagerstätten am Lake Superior, Macco, 1.
- Explorations for oil and gas, Lane, 31.
- Failure of wells in Michigan, Fuller (M. L.), 37.
- Fifth annual report of State geologist, Lane, 39.
- Geologic section in Alpena and Presque Isle counties, Grabau, 2.

Michigan—Continued.
- Geological cross sections of Keeweenaw Point, Hubbard (L. L.), 1.
- Geological map of Michigan, Lane, 11.
- Geological reconnaissance along north shore, Russell, 23.
- Geological Survey of Michigan, field work of 1900, Savicki, 1.
- Geology of lands in upper peninsula, Rose, 2.
- Geology of Menominee Range, Hulst, 1.
- Geology of some lands in Michigan, Rose, 1.
- Geothermal gradient in Michigan, Lane, 16.
- Glacial features of lower Michigan, Leverett, 6.
- Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.
- Glacial geology of Grand Rapids area, Leverett, 9.
- Glacial geology of southern peninsula of Michigan, Leverett, 8.
- Glacial phenomena in Indiana and Michigan, Montgomery (H. T.), 1.
- Gold near Lake Superior, Lane, 35.
- Ground-water problem in southeastern Michigan, Fuller (M. L.), 34.
- Gypsum, Diehl, 1.
- Gypsum and plaster industry of Michigan, Grimsley, 7.
- Gypsum deposits in Michigan, Grimsley, 4.
- Historical review of geology of Michigan, Lane, 36.
- Ice work in southeastern Michigan, Sherzer, 1.
- Iron-ore deposits of the Lake Superior region, Van Hise, 2.
- Lake Superior geological work, Van Hise, 14.
- Lake Superior iron-ore deposits, Grant (U. S.), 6.
- Lake Superior iron region, Leith, 10.
- Limestone regions of Michigan, Grabau, 12.
- Limestones of Michigan, Lane, 9, 41.
- Localities and mills manufacturing cement, Lane, 21.
- Marl and the manufacture of Portland cement, Hale, 1.
- Marls and clays, Fall, 1.
- Marls and clays in Michigan, Fall, 2.
- Menominee district of Michigan, Bayley, 1.
- Meteorite from Allegan, Michigan, and Mart, Texas, Merrill and Stokes, 1.
- Michigan clay, shales, and paving materials, Lane, 34.
- Michigan limestones, Lane, 1.
- Northern interior coal field, Lane, 15.
- Notes on rocks and minerals of Michigan, Wright (F. E.), 6.
- Origin of gypsum, Grimsley, 8.
- Origin of Michigan boglimes, Lane, 20.

Michigan—Continued.
- Origin of Michigan gypsum deposits, Grimsley, 6.
- Paleozoic coral reefs, Grabau, 10.
- Platygonus compressus Le Conte, Wagner, 1.
- Port Huron oil field, Gordon (C. H.), 2.
- Portland cement industry in Michigan, Russell, 6.
- Pre-Glacial surface deposits, Lane, 2.
- Recent work of geological survey, Lane, 18.
- Reed City meteorite, Preston (H. L.), 4.
- Relation of vein at Central mine, Keweenaw Point, to Kearsage conglomerate, Hubbard (L. L.), 2.
- Report of Michigan geological survey, Lane, 17.
- Report of progress in the Porcupines, Wright (F. E.), 4.
- Report of State geologist, Lane, 3.
- Report on Arenac County, Gregory (W. M.), 1, 2.
- Report on Lake Superior region, Van Hise and others, 1.
- Salt, Lane, 12.
- Shells of marls, Walker (B.), 1.
- Sixth annual report of State geologist, Lane, 48, 49.
- Stratigraphy of Traverse group, Grabau, 5.
- Stream capture in Michigan, Bowman I.), 1.
- Sub-Carboniferous limestone exposure at Grand Rapids, Whittemore, 1.
- Subsurface geology of Alcona County, Lane, 7.
- Suggestion from State geologist, Lane, 4.
- Summary of Lake Superior geology, Leith, 14.
- Surface geology of Alcona County, Leverett, 3.
- Surface geology of Lapeer County, Taylor (F. B.), 2.
- Tamarack mine cross section, Lane, 45.
- Theory of copper deposition, Lane, 28.
- Topography, soils, water resources, etc., of Muskegon County, McLouth, 1.
- Traverse group of Michigan, Grabau, 14.
- Underground waters of lower Michigan, Lane, 38.
- Variation of geothermal gradient, Lane, 27.
- Water resources of Michigan, Cooper (W. F.), 1.
- Water supply of the lower peninsula of Michigan, Cooper (W. F.), 2.
- Waters of upper peninsula of Michigan, Lane, 40.
- Wave cutting on west shore of Lake Huron, Gordon (C. H.), 3.
- Work of Geological Survey in upper peninsula, Hubbard (L. L.), 3.

Mineralogy.
- Action of ammonium chloride upon silicates, Clarke and Steiger, 1.
- Action of silver nitrate and thallous nitrate upon certain natural silicates, Steiger, 2.
- Alkalisyenit von Beverly, Mass., Wright (F. E.), 3.
- Alunite-jarosite group of minerals, Hillebrand and Penfield, 1.
- Amphibole hudsonite, Weidman, 2.
- Analisis y clasificación de un granate de Pihuamo, Villarello, 2.
- Analysis of kunzite, Davis (R. O. E.), 1.
- Audover meteorite, Ward (H. A.), 6.
- Apatite crystals, Antwerp, N. Y., Knight (N.), 4.
- Apatite, from Minot, Me., Wolff and Palache, 1.
- Archæan rocks of Ottawa Valley, Osann, 2.
- Arizpe meteorite, Wuensch, 1.
- Arrangement of collections of meteorites, Brezina, 1.
- Babingtonite from Massachusetts, Palache and Fraprie, 1.
- Bacubirito meteorite, Aguilera, 4.
- Bacubirito, or the great meteorite of Sinaloa, Mexico, Ward (H. A.), 4.
- Barite and selenite crystals, Rowe, 3.
- Barites of Nebraska and Bad Lands, Barbour (E. H.), 1.
- Bastnasite and tysonite, Allen and Comstock, 1.
- Bath Furnace aerolite, Ward (H. A.), 12.
- Bath Furnace meteoric fall, Miller (A. M.), 3.
- Bath Furnace meteorite, Ward (H. A.), 5.
- Bauxite deposits of Georgia, Watson (T. L.), 12.
- Bedford cyrtolite, Luquer, 2.
- Bibliography and index of North American geology, paleontology, petrology, and mineralogy, Weeks, 3, 4, 6, 7, 10, 15.
- Billings meteorite, Ward (H. A.), 10.
- Bismuth and bismite from Pala, Cal., Kunz, 6.
- Borderland between crystallography and chemistry, Goldschmidt, 1.
- Calcite from the Joplin mining district, Sterrett, 2.
- California minerals, Schaller, 3.
- Californite, a new ornamental stone, Kunz, 5.
- Canadian amphiboles, Harrington (B. J.), 2.
- Canyon City meteorite, Ward (H. A.), 7.
- Cape York meteorites, Hovey (E. O.), 42.
- Carnotite and associated vanadiferous minerals in western Colorado, Hillebrand and Ransome, 1.
- Casas Grandes meteorite, Tassin, 3.

Mineralogy—Continued.

Catalogue of meteorites, Farrington, 9.
Catalogue of the Ward-Coonley collection of meteorites, Ward (H. A.), 9.
Celestite near Syracuse, Kraus, 2.
Chemical composition of amblygonite, Penfield, 2.
Chemical composition of axinite, Ford (W. E.), 3.
Chemical composition of childrenite, Penfield, 1.
Chemical composition of durangite, Brush, 4.
Chemical composition of hamlinite and its occurrence with bertrandite, Penfield, 5.
Chemistry and mineralogy, Hoffmann, 8.
Chrysoberyl from Canada, Evans (N. N.), 2.
Chrysocolla: a remarkable case of hydration, Palmer (C. M.), 1.
Clackamas meteoric iron, Kunz, 9.
Colemanite from southern California, Eakle, 2.
Colorado: Report of State Bureau of Mines, Lee (H. A.), 1.
Composition and occurrence of pollucite, Wells, 2.
Composition of Montreal minerals, Harrington (B. J.), 5.
Composition of tourmaline, Kunz, 3.
Composition of yttrialite, Hillebrand, 2.
Composition of yttrialite, with a criticism of the formula assigned to thalénite, Hillebrand, 7.
Concentration of barium in limestone, Dickson, 2.
Condition of nickel in nickeliferous pyrrhotite from Sudbury, Dickson, 1.
Constituents of meteorites, Farrington, 3.
Contribution to mineralogy of California, Blasdale, 1.
Contributions from the mineralogic laboratory, Whitlock, 4.
Contributions from mineralogical laboratory of University of Minnesota, Hobbs, 28.
Contributions to mineralogy, Eyerman, 1.
Copper deposits of Clifton-Morenci district, Lindgren, 29.
Copper ore and garnet in association, Blake (W. P.), 16.
Corundum of North Carolina, Pratt and Lewis, 1.
Crystal drawing, Penfield, 7.
Crystalline development of calaverite, Smith (G. F. H.), 1.
Crystallization of mohawkite, domeykite, and other similar arsenides, Koenig, 1.
Crystallization of Luzonite, Moses, 5.
Crystallization of molybdenite, Moses, 3.

Mineralogy—Continued.

Crystallographic study of millerite, Palache and Wood, 1.
Crystallographical and chemical notes on lawsonite, Schaller and Hillebrand, 1.
Crystallography of calcites of New Jersey trap region, Rogers, 5.
Crystallography of lepidolite, Schaller, 6.
Deposits of copper ores at Ducktown, Tenn., Kemp, 10.
Deposits of wolframite in the Black Hills, Irving, 1.
Description of four meteorites, Ward (H. A.), 3.
Description of new species from Branchville, Brush and Dana, 1.
Descriptive catalogue of collections of gems of U. S. National Museum, Tassin, 1.
Descriptive catalogue of meteorite collection in U. S. National Museum, Tassin, 2.
Determination of brucite as a rock constituent, Julien, 9.
Determination of feldspars in thin section, Spurr, 7.
Determination of optical character of bi-refracting minerals, Wright (F. E.), 5.
Determination of relative refractive indices of minerals, Luquer, 1.
Determining index of refraction, Hotchkiss, 1.
Development of pseudomorphs, Patton, 2.
Discovery of meteoric iron in Nebraska, Barbour (E. H.), 3.
Doughty springs, a group of radium-bearing springs, Headden, 3.
Dumortierite, Schaller, 5, 7.
Economic geology of the Silverton quadrangle, Ransome, 1.
Emmonsite from a new locality, Hillebrand, 4.
Epidote crystals from Alaska, Palache, 1.
Exhibit of radium collection at the St. Louis Exposition, Kunz, 10.
Famous gold nuggets of the world, Hurley, 1.
Fierro meteorico de Bacubirito, Angermann, 3.
Fifth Branchville paper, Brush and Dana, 5.
Fluorescent gems, Levison, 1.
Formula of bornite, Harrington (B. J.), 3.
Franceville meteorite, Preston (H. L.), 2, 3.
Garnetiferous bed in Golden Gate Canyon, Bailey, Rath, and Grider, 1.
Gem minerals of California, Kunz, 8.
Gems and gem minerals, Farrington, 12.

Mineralogy—Continued.
Gems and precious stones of Mexico, Halse, 3.
Gems and precious stones of Mexico, Kunz, 4.
Gems and rare minerals of southern California, Sovereign, 1.
Geographical distribution of meteorites, Farrington, 14.
Geological relations and distribution of platinum and associated metals, Kemp, 11.
Geology and ore deposits of Elkhorn mining district, Montana, Weed, 5.
Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
Geology of Worcester, Mass., Perry and Emerson, 1.
Geology of western Mexico, Farrington, 13.
Globe folio, Ransome, 13.
Gold and its associations, Merrill (G. P.), 15.
Gold belt of Blue Mountains of Oregon, Lindgren, 4.
Guide to mineral collections, Gratacap, 6.
Guide to mineralogic collections of New York State Museum, Whitlock, 1.
Highway construction in Wisconsin, Buckley, 3.
Hussakite, a new mineral, and its relation to xenotime, Kraus and Reitinger, 1.
Identity of palacheite and botryogen, Eakle, 3.
Ilvaite from Siorarsuit at Julianehaab, Böggild, 1.
Inclusions in quartz, Keeley, 1.
Inclusions in quartz, Bilgram, 1.
Index to North American geology, paleontology, petrology, and mineralogy for 1892–1900, Weeks, 4.
Internal structure of cliftonite, Davison, 1.
Iodobromite in Arizona, Blake, 18.
Iron of meteoric origin, Pratt, 1.
Iron-nickel alloy, awaruite, Jamieson, 1.
Isomorphism and thermal properties of the feldspars, Becker, 5.
Isomorphism and thermal properties of the feldspars, Day and Allen, 2.
Isomorphism and thermal properties of the feldspars. Optical study, Iddings, 4.
Jade, Easter, 1.
Jadeit und Chloromelanit aus Guatemala, Bauer, 1.
Kunzite, Baskerville, 1.
Kunzite and its unique properties, Baskerville and Kunz, 1.
Lawsonite, Schaller and Hillebrand, 2.
Lead and zinc deposits of Ozark region, Bain, 2.

Mineralogy—Continued.
Lead and zinc deposits of Ozark region, Van Hise, 5.
Lead and zinc deposits of southwestern Wisconsin, Grant (U. S.), 5.
Lead and zinc deposits of Virginia, Watson (T. L.), 17.
Lead, zinc, and fluorspar deposits of western Kentucky, Smith (W. S. T.), 3.
Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich and Smith, 1.
Lecture notes on crystallography, Patton, 5.
Lilac-colored transparent spodumene, Kunz, 7.
Linear force of growing crystals, Becker and Day, 1.
Luminescent zinc-blende, Eakle and Sharwood, 1.
Mart and Bluff meteorites, Charlton, 1.
Melanochalcite and keweenawite, Koenig, 2.
Mercury minerals from Terlingua, Texas, Moses, 2.
Metallic veins of Farmington meteorite, Farrington, 1.
Metasomatic processes in fissure veins, Lindgren, 1.
Meteoreisen-Studien, Cohen, 4.
Meteoreisen von Cincinnati, Cohen, 3.
Meteoreisen von Cuernavaca und Iredell, Cohen, 8.
Meteoreisen von De Sotoville, Brezina and Cohen, 5.
Meteoreisen von Forsyth County, Georgia, Cohen, 2.
Meteoreisen von Locust Grove, Nord-Carolina, Cohen, 1.
Meteoreisen von Millers Run bei Pittsburgh, Cohen, 7.
Meteoreisen von Nenntmannsdorf und Persimmon Creek, Cohen, 6.
Meteoreisen von Persimmon Creek, Klein, 2.
Meteoreisen von Ranchito und Casas Grandes, Cohen, 5.
Meteoric iron from Augusta County Virginia, Campbell and Howe, 1.
Meteorite collection, Ward (H. A.), 11.
Meteorite de Cañon Diablo, Moissan, 3.
Meteorite from Admire, Kansas, Merrill (G. P.), 4.
Meteorite from Algoma, Kewaunee County, Wisconsin, Hobbs, 13, 15.
Meteorite from Allegan, Michigan, and Mart, Texas, Merrill and Stokes, 1.
Meteorite from Hendersonville, Glenn, 3.
Meteorite from Mount Vernon, Kentucky, Merrill (G. P.), 7.
Meteorite from Shelburne, Johnston (R. A. A.), 3.
Meteorite in Supreme Court, Winchell (N. H.), 28.
Meteorite studies, Farrington, 6.

Mineralogy—Continued.
Meteorite which fell near Felix, Alabama, Merrill (G. P.), 2.
Meteorites and their collectors, Holder, 3.
Meteorites of Kansas, Farrington, 11.
Meteorites of Nebraska, Barbour (E. H.), 4.
Meteorites of northwestern Kansas, Farrington, 8.
Method for the exact expression of crystal habit, Rogers, 7.
Method of petrographic analysis, Derr, 1.
Microscopic - petrographical methods, Wright (F. E.), 2.
Mineral analyses, Clarke (F. W.), 1.
Mineral asbestiforme, Villarello, 4.
Mineral catalog, Foote, 1.
Mineral containing radium, Obalski, 2.
Mineral occurrences in the Salina epoch, Kraus, 3.
Mineral tables, Eakle, 5.
Mineralogia Grœnlandica, Böggild, 5.
Mineralogical notes, Chester, 1.
Mineralogical notes, Eakle, 1.
Mineralogical notes, Headden, 1, 4.
Mineralogical notes, Moses, 1.
Mineralogical notes, Rogers, 2, 4.
Mineralogical notes, Schaller, 8.
Mineralogical notes, Warren, 1.
Mineralogisk resa i Syd-Groenland, Flink, 1.
Mineralogisk-petrografiske undersoegelser af Groenlandske nefelin syeniter og beslægtede bjægarter, Ussing, 1.
Mineralogy of Chicago area, Crook, 1.
Mineralogy [of Missouri], Broadhead, 2.
Minerals and mineral localities of Texas, Simonds, 3.
Minerals associated with copper, Stone (G. H.), 1.
Minerals at Haddam, Martin (D. S.), 1.
Minerals from Julianehaab, Greenland, Böggild, 2.
Minerals from Leona Heights, Alameda County, California, Schaller, 1.
Minerals from Narsarsuk in southern Greenland, Flink, 2.
Minerals from Pacific States, Turner, 4, 7.
Minerals from the basalt of east Greenland, Böggild, 4.
Minerals from the Clifton-Morenci district, Arizona, Lindgren and Hillebrand, 1.
Minerals from the nephelite-syenite at Julianehaab, Böggild and Winther, 1.
Minerals in gold quartz veins, Lindgren, 3.
Minerals in rock sections, Luquer, 4.
Minerals of Joplin district, Rogers, 6.
Minerals of Nova Scotia, Gilpin, 1.
Minerals of Ottawa Valley, Willimott, 1.

Mineralogy—Continued.
Minerals of region about Nashville, Glenn, 7.
Minerals of Rhode Island, Davis (C. Abbott), 1.
Minerals of the Harriman Alaska expedition, Palache, 4.
Mines and minerals of Guanajuato, Blake (W. P.), 7.
Missouri and Arkansas zinc mines, Hedburg, 1.
Modes of occurrence of albertite, Bailey (L. W.), 1.
Mohawkite, Richards (J. W.), 1.
Molybdenite at Crown Point, Crook, 3.
Mount Vernon meteorite, Tassin, 5.
Native arsenic from Montreal, Evans (N. N.), 1.
New form of calcite-sand crystal, Barbour and Fisher, 2.
New forms of sperrylite, Goldschmidt and Nicol, 1.
New habit for chalcopyrite, Richards (R. W.), 1.
New lilac-colored spodumene, Kunz, 7.
New mercury mineral from Terlingua, Hillebrand, 8.
New meteorite from Kansas, Farrington, 7.
New meteorite from Kentucky, Miller (A. M.), 2.
New Mexico mines and minerals, Jones (F. A.), 1.
New mineral occurrences in Canada, Hoffmann, 2.
New minerals from Franklin, N. J., Penfield and Warren, 1.
New minerals in Canada, Hoffmann, 3.
New occurrence of sperrylite, Wells and Penfield, 1.
New York mineral localities, Whitlock, 2.
Niagara meteorite, Preston (H. L.), 1.
Nickel and copper deposits of Sudbury, Barlow, 8.
Nonmetallic minerals, Merrill (G. P.), 12.
Nonmetallic minerals, U. S. National Museum, Merrill (G. P.), 3.
Note on certain copper minerals, Winchell (A. N.), 2.
Notes on rocks and minerals of Michigan, Wright (F. E.), 6.
Occurrence and distribution of celestite-bearing rocks, Kraus, 4.
Occurrence of aurichalcite, Keyes, 39.
Occurrence of chrompicotite, Hoffmann, 5.
Occurrence of fayalite in Wisconsin, Weidman, 4.
Occurrence of mica in Boulder County, Schwarz, 1.
Occurrence of minerals at Haddam Neck, Bowman (H. L.), 1.
Occurrence of Texas mercury minerals, Hill (B. F.), 2.

Mineralogy—Continued.
- Occurrence of thaumasite, Penfield and Pratt, 1.
- Occurrence of zoisite and thulite, Bibbins, 1.
- Octahedrite and brookite, Robinson (H. H.), 1.
- On bixbyite, Penfield and Foote, 1.
- On calaverite, Penfield and Ford, 1.
- On californite, Clarke and Steiger, 2.
- On clinohedrite, Penfield and Foote, 2.
- On gahnite, Brush, 3.
- On hortonolite, Brush, 1.
- On mordenite, Pirsson, 2.
- On northupite, pirssonite, etc., Pratt, 3.
- On pearceite, Penfield, 4.
- On spangolite, Penfield, 3.
- On sussexite, Brush, 2.
- On wellsite, Pratt and Foote, 1.
- Optische Orientirung des Albit von Amelia, Becke, 1.
- Ore deposits of Rico Mountains, Colorado, Ransome, 3.
- Ore deposits of Monte Cristo, Spurr, 3.
- Oscuro Mountain meteorite, Hills, 3.
- Oxygen in its relation to mineralogy, Cooper (J. C.), 1.
- Palacheite, Eakle, 4.
- Peculiar occurrence of bitumen, Morgan and Tallmon, 2.
- Persimmon Creek meteorite, Tassin, 4.
- Phlogopite crystal, McNairn, 1.
- Phosphorescent sphalerite, Eakle, 6.
- Phosphorus in Saline Township meteorite, Farrington, 10.
- Physical geography, etc., of Essex County, Mass., Sears, 1.
- Platinum in nickel-copper ores from Sudbury, Dickson, 3.
- Pre-terrestial history of meteorites, Farrington, 4.
- Prismatic crystals of hematite, McKee, 1.
- Production des pierres precieuses aux Etats-Unis, Kunz, 1.
- Progress of mineralogy in 1899, Hamilton and Withrow, 1.
- Pseudomorphs and crystal cavities, Rowe, 4.
- Purpurite, a new mineral, Graton and Schaller, 1.
- Pyrite and marcasite, Julien, 5.
- Pyrite and marcasite, Stokes, 1.
- Quartz from San Diego County, Waring, 1.
- Quecksilbermineralien von Terlingua in Texas, Moses, 4.
- Radium in an American ore, Phillips (A. H.), 1.
- Rare metals from Rambler mine, Wyoming, Read 1.
- Recent mineralogical literature, Moses and Luquer, 2, 3.
- Red beryl from Utah, Hillebrand, 5.
- Reed City meteorite, Preston (H. L.), 4.
- Regeneration of clastic feldspar, Winchell (N. H.), 9.

Mineralogy—Continued.
- Relations of tetrahedral combinations to crystalline form, Blake (J. C.), 2.
- Replacement of quartz by pyrite and corrosion of quartz pebbles, Smyth, 6.
- Report of section of chemistry and mineralogy, Hoffmann, 1, 4, 6.
- Report of State geologist of Nebraska, Barbour (E. H.), 8.
- Results of late mineral research in Llano County, Hidden, 1.
- Rickardite, Ford (W. E.), 2.
- Road-making materials of Pennsylvania, Ihlseng, 1.
- Rodeo meteorite, Farrington, 16.
- Ste. Genevieve meteorite, Ward (H. A.), 1.
- Second Branchville paper, Brush and Dana, 2.
- Secondary enrichment in ore deposits of copper, Kemp, 33.
- Serpentines of Manhattan Island, Newland, 1.
- Shelburne meteorite, Borgström, 1.
- Silverton folio, Ransome, 16.
- Sodalite syenite (ditroite) from Ice River Valley, Canadian Rocky Mountains, Bonney, 1.
- Souesite, a native iron-nickel alloy, Hoffmann, 7.
- Sperrylite, Wells, 1.
- Spinel twins of pyrite, Nicol, 1.
- Spodumene, and results of its alteration, Brush and Dana, 4.
- Spodumene from San Diego County, Schaller, 2.
- Stibnite at Steamboat Springs, Lindgren, 24.
- Structure of meteorites, Farrington, 2.
- Study of minerals in the laboratory, Day (A. L.), 1.
- Synthesis of chalcocite and its genesis at Butte, Mont., Winchell (H. V.), 2.
- Tables of minerals, Penfield, 6.
- Third Branchville paper, Brush and Dana, 3.
- Titaniferous magnetite in Wyoming, Kemp, 36.
- Titaniferous pyroxene, Winchell (A. N.), 3.
- Tourmaline contact zones near Alexandria Bay, N. Y., Smyth (C. H.), 3.
- Tourmaline from San Diego County, Sterrett, 1.
- Tourmaline localities of southern California, Schaller, 4.
- Treatise on metamorphism, Van Hise, 12.
- Tungsten mine at Trumbull, Conn., Hobbs, 5.
- Two tellurium minerals from Colorado, Hillebrand, 6.
- Tychite, Penfield and Jamieson, 1.
- Ultimate disintegration products of the radio active elements, Boltwood, 1.
- Uranophane in Georgia, Watson (T. L.), 7.

Mineralogy—Continued.
- Variety of fetid calcite and cause of its odor, Harrington, 1.
- Vorkommen der texanischen Quecksilbermineralien, Hill (B. F.), 4.
- Ward-Coonley collection of meteorites, Gratacap, 3.
- Ward-Coonley collection of meteorites, Ward (H. A.), 2.
- Willamette meteorite, Ward (H. A.), 8.
- Willamette meteorite, Winchell (N. H.), 29.
- Wollastonite rock mass, Collins (H. F.), 1.
- Zinc and lead deposits of north Arkansas, Branner, 2.

Minerals described.
- Acmite Böggild, 5.
- Acmite, Harrington (B. J.), 5.
- Acmite, Van Hise, 12.
- Actinolite, Böggild, 5.
- Actinolite, Perry and Emerson, 1.
- Actinolite, Pratt and Lewis, 1.
- Actinolite, Simonds, 3.
- Actinolite, Van Hise, 12.
- Actinolite, Whitlock, 1.
- Adularia, Simonds, 3.
- Aegirine, Böggild, 5.
- Aegirine, Flink, 2.
- Aegirite, Clarke and Steiger, 1.
- Aegirite, Steiger, 2.
- Aenigmatite, Böggild, 5.
- Aerolite, Whitlock, 1.
- Agate, Barbour (E. H.), 8.
- Agate, Simonds, 3.
- Alabaster, Farrington, 12.
- Alabaster, Whitlock, 1.
- Alamandite, Simonds, 3.
- Albertite, Bailey (L. W.), 1.
- Albertite, Merrill (G. P.), 12.
- Albertite, Whitlock, 1.
- Albite, Becke, 1.
- Albite, Böggild, 5.
- Albite, Bowman (H. L.), 1.
- Albite, Clarke and Steiger, 1.
- Albite, Day and Allen, 2.
- Albite, Palache, 4.
- Albite, Pratt and Lewis, 1.
- Albite, Simonds, 3.
- Albite, Tassin, 1.
- Albite, Van Hise, 12.
- Albite, Whitlock, 1.
- Algodonite, Koenig, 2.
- Allanite, Böggild, 5.
- Allanite, Farrington, 12.
- Allanite, Merrill (G. P.), 12.
- Allanite, Perry and Emerson, 1.
- Allanite, Simonds, 3.
- Allanite, Van Hise, 12.
- Allemontite, Merrill (G. P.), 12.
- Allophane, Bain, 2.
- Allophane, Hoffmann, 4.
- Almandite, Pratt and Lewis, 1.
- Almandite, Van Hise, 12.
- Almandite, Whitlock, 1.
- Altaite, Eakle, 1.
- Altaite, Hoffmann, 4.

Minerals described—Continued.
- Alunite, Hillebrand and Penfield, 1.
- Alunite, Lindgren, 29.
- Alunite, Merrill (G. P.), 12.
- Alunite, Whitlock, 1.
- Alunogen, Headden, 4.
- Amazonstone, Hoffmann, 4.
- Amber, Farrington, 12.
- Amber, Kunz, 4.
- Amber, Tassin, 1.
- Amber, Whitlock, 1.
- Amblygonite, Schaller, 3, 8.
- Amblygonite, Sovereign, 1.
- Amesite, Van Hise, 12.
- Amethyst, Simonds, 3.
- Amphibole, Buckley, 3.
- Amphibole, Eyerman, 1.
- Amphibole, Harrington (B. J.), 2.
- Amphibole, Ihlseng, 1.
- Amphibole, Kemp, 10.
- Amphibole, Lindgren, 29.
- Amphibole, Pratt and Lewis, 1.
- Amphibole, Simonds, 3.
- Amphibole, Spurr, 3.
- Amphibole, Whitlock, 1.
- Amphibole, Wright (F. E.), 6.
- Analcime, Böggild, 4, 5.
- Analcime, Flink, 2.
- Analcite, Clarke and Steiger, 1.
- Analcite, Harrington (B. J.), 5.
- Analcite, Steiger, 2.
- Analcite, Van Hise, 12.
- Analcite, Whitlock, 1.
- Analcite, Wright (F. E.), 6.
- Anchylite, Böggild, 5.
- Ancylite, Flink, 2.
- Andalusite, Böggild, 5.
- Andalusite, Farrington, 12.
- Andalusite, Tassin, 1.
- Andalusite, Van Hise, 12.
- Andalusite, Whitlock, 1.
- Andesine, Böggild, 5.
- Andesine, Iddings, 4.
- Andesine, Pratt and Lewis, 1.
- Andesine-labradorite, Iddings, 4.
- Andesine, Van Hise, 12.
- Andradite, Pratt and Lewis, 1.
- Andradite, Simonds, 3.
- Andradite, Whitlock, 1.
- Anglesite, Grant (U. S.), 5.
- Anglesite, Whitlock, 1.
- Anhydrite, Schaller, 8.
- Anhydrite, Tassin, 1.
- Anhydrite, Van Hise, 12.
- Anhydrite, Whitlock, 1.
- Ankerite, Böggild, 5.
- Ankerite, Simonds, 3.
- Ankerite, Smith (W. S. T.), 3.
- Ankerite, Van Hise, 12.
- Annabergite, Barlow, 8.
- Anorthite, Böggild, 5.
- Anorthite, Day and Allen, 2.
- Anorthite, Iddings, 4.
- Anorthite, Pratt and Lewis, 1.
- Anorthite, Van Hise, 12.
- Anorthite, Whitlock, 1.
- Anorthoclase, Van Hise, 12.

Minerals described—Continued.
Antophyllite, Böggild, 5.
Anthophyllite, Pratt and Lewis, 1.
Anthophyllite, Van Hise, 12.
Anthophyllite, Warren, 1.
Anthracite, Hoffmann, 4.
Anthracite, Whitlock, 1.
Antimony, Hoffmann, 6.
Antimony, Whitlock, 1.
Apatite, Böggild, 5.
Apatite, Bowman (H. L.), 1.
Apatite, Crook, 1.
Apatite, Farrington, 12.
Apatite, Flink, 2.
Apatite, Kemp, 10.
Apatite, Knight (N.), 4.
Apatite, Merrill (G. P.), 12.
Apatite, Pratt and Lewis, 1.
Apatite, Simonds, 3.
Apatite, Turner, 4, 7.
Apatite, Van Hise, 12.
Apatite, Whitlock, 1.
Apatite, Wolff and Palache, 1.
Apatite, Wright (F. E.), 6.
Apophyllite, Böggild, 4, 5.
Apophyllite, Clarke and Steiger, 1.
Apophyllite, Schaller, 8.
Apophyllite, Tassin, 1.
Apophyllite, Van Hise, 12.
Apophyllite, Whitlock, 1.
Apophyllite, Wright (F. E.), 6.
Aragonite, Böggild, 4, 5.
Aragonite, Crook, 1.
Aragonite, Pratt and Lewis, 1.
Aragonite, Simonds, 3.
Aragonite, Tassin, 1.
Aragonite, Van Hise, 12.
Aragonite, Whitlock, 1.
Arfvedsonite, Böggild, 5.
Arfvedsonite, Flink, 2.
Arfvedsonite, Pratt and Lewis, 1.
Arfvedsonite, Van Hise, 12.
Argentite, Crook, 1.
Argentite, Ransome, 3, 16.
Argentite, Simonds, 3.
Argentite, Whitlock, 1.
Arsenic, Evans (N. N.), 1.
Arsenic, Warren, 1.
Arsenic, Whitlock, 1.
Arsenopyrite, Böggild, 5.
Arsenopyrite, Chester, 1.
Arsenopyrite, Spurr, 3.
Arsenopyrite, Whitlock, 1.
Asbestos, Böggild, 5.
Asbestos, Hoffmann, 6.
Asbestos, Lindgren, 29.
Asbestos, Simonds, 3.
Asbestos, Whitlock, 1.
Asphalt, Crook, 1.
Asphalt, Glenn, 7.
Asphaltum, Simonds, 3.
Asphaltum, Whitlock, 1.
Atacamite, Moses, 1.
Atacamite, Simonds, 3.
Atacamite, Whitlock, 1.
Augite, Böggild, 5.
Augite, Crook, 1.

Minerals described—Continued.
Augite, Van Hise, 12.
Augite, Whitlock, 1.
Anglesite, Rogers, 5.
Aurichalcite, Keyes, 39.
Aurichalcite, Weed, 5.
Autunite, Whitlock, 1.
Aventurine, Simonds, 3.
Awaruite, Jamieson, 1.
Axinite, Farrington, 12.
Axinite, Ford (W. E.), 3.
Axinite, Tassin, 1.
Axinite, Van Hise, 12.
Axinite, Weed, 5.
Axinite, Whitlock, 1.
Azurite, Böggild, 5.
Azurite, Crook, 1.
Azurite, Hoffmann, 6.
Azurite, Kemp, 33.
Azurite, Lindgren, 29.
Azurite, Simonds, 3.
Azurite, Tassin, 1.
Azurite, Weed, 5.
Azurite, Whitlock, 1.
Babingtonite, Palache and Fraprie, 1.
Barite, Bain, 2.
Barite, Barbour (E. H.), 8.
Barite, Böggild, 5.
Barite, Glenn, 7.
Barite, Grant (U. S.), 5.
Barite, Headden, 3.
Barite, Hoffmann, 4.
Barite, Merrill (G. P.), 12.
Barite, Ransome, 16.
Barite, Rogers, 2, 4.
Barite, Rowe, 3.
Barite, Simonds, 3.
Barite, Smith (W. S. T.), 3.
Barite, Tassin, 1.
Barite, Ulrich and Smith, 1.
Barite, Whitlock, 1.
Barite, Wright (F. E.), 6.
Barites, Barbour (E. H.), 1.
Barium, Boltwood, 1.
Barium, Dickson, 2.
Barkevikite, Böggild, 5.
Bastnasite, Allen and Comstock, 1.
Bauxite, Merrill (G. P.), 12.
Bauxite, Pratt and Lewis, 1.
Bauxite, Whitlock, 1.
Bauxite, Simonds, 3.
Beryl, Böggild, 5.
Beryl, Bowman (H. L.), 1.
Beryl, Farrington, 12.
Beryl, Hillebrand, 5.
Beryl, Kunz, 8.
Beryl, Simonds, 3.
Beryl, Tassin, 1.
Beryl, Whitlock, 1.
Beryllonite, Tassin, 1.
Biotite, Böggild, 5.
Biotite, Crook, 1.
Biotite, Eyerman, 1.
Biotite, Flink, 2.
Biotite, Pratt and Lewis, 1.
Biotite, Van Hise, 12.
Biotite, Simonds, 3.

Minerals described—Continued.
Biotite, Whitlock, 1.
Bismite, Kunz, 6.
Bismuth, Boltwood, 1.
Bismuth, Kunz, 6.
Bismuth, Whitlock, 1.
Bismuthinite, Hoffmann, 6.
Bismuthinite, Ransome, 16.
Bismuthite, Headden, 4.
Bismuthite, Weed, 5.
Bitumen, Bain, 2.
Bixbyite, Penfield and Foote, 1.
Blende, Spurr, 3.
Blende, Weed, 5.
Boothite, Schaller, 1, 3, 8.
Boracite, Merrill (G. P.), 12.
Boracite, Whitlock, 1.
Borax, Day and Allen, 2.
Borax, Whitlock, 1.
Bornite, Böggild, 5.
Bornite, Harrington (B. J.), 3.
Bornite, Kemp, 33.
Bornite, Ransome, 16.
Bornite, Simonds, 3.
Bornite, Whitlock, 1.
Bornite, Winchell (A. N.), 2.
Bornite, Wright (F. E.), 6.
Botryogen, Eakle, 3.
Bournonite, Ransome, 16.
Bournonite, Schaller, 8.
Bournonite, Weed, 5.
Bournonite, Whitlock, 1.
Brannerite, Branner, 3.
Brannerite, Hedburg, 1.
Braunite, Merrill (G. P.), 12.
Braunite, Simonds, 3.
Britolite, Böggild, 5.
Britholite, Böggild and Winther, 1.
Brochantite, Lindgren, 29.
Brochantite, Lindgren and Hillebrand, 1.
Brochantite, Ransome, 11.
Brochantite, Whitlock, 1.
Bromyrite, Simonds, 3.
Bronzite, Farrington, 12.
Bronzite, Pratt and Lewis, 1.
Bronzite, Simonds, 3.
Bronzite, Van Hise, 12.
Brookite, Robinson (H. H.), 1.
Brookite, Tassin, 1.
Brookite, Van Hise, 12.
Brucite, Julien, 9.
Brucite, Van Hise, 12.
Brucite, Whitlock, 1.
Bytownite, Iddings, 4.
Bytownite, Van Hise, 12.
Calamine, Bain, 2.
Calamine, Branner, 2.
Calamine, Clarke and Steiger, 1.
Calamine, Grant (U. S.), 5.
Calamine, Lindgren, 29.
Calamine, Lindgren and Hillebrand, 1.
Calamine, Simonds, 3.
Calamine, Smith (W. S. T.), 3.
Cerussite, Watson (T. L.), 17.
Calamine, Weed, 5.
Calaverite, Penfield and Foote, 1.
Calaverite, Smith (G. F. H.), 1.
Calcedony, Böggild, 4.
Calciovolborthite, Lindgren, 4.
Calcite, Bain, 2.
Calcite, Barbour (E. H.), 8.
Calcite, Böggild, 4, 5.
Calcite, Buckley, 3.
Calcite, Crook, 1.
Calcite, Flink, 2.
Calcite, Glenn, 7.
Calcite, Grant (U. S.), 5.
Calcite, Harrington (B. J.), 4.
Calcite, Hobbs, 28.
Calcite, Ihlseng, 1.
Calcite, Kemp, 10.
Calcite, Lindgren, 29.
Calcite, Merrill (G. P.), 12.
Calcite, Palache, 4.
Calcite, Patton, 2.
Calcite, Perry and Emerson, 1.
Calcite, Pratt and Lewis, 1.
Calcite, Ransome, 4, 16.
Calcite, Rogers, 2, 4, 5.
Calcite, Simonds, 3.
Calcite, Smith (W. S. T.), 3.
Calcite, Spurr, 3.
Calcite, Sterrett, 2.
Calcite, Tassin, 1.
Calcite, Ulrich and Smith, 1.
Calcite, Van Hise, 12.
Calcite, Watson (T. L.), 17.
Calcite, Weed, 5.
Calcite, Whitlock, 1, 4.
Calcite, Wright (F. E.), 6.
Calcite-sand crystal, Barbour and Fisher, 2.
Calcite strontium, Chester, 1.
Caledonite, Rogers, 2.
Californite, Clarke and Steiger, 2.
Californite (Vesuvianite), Kunz, 5.
Callainite, Farrington, 12.
Calomel, Simonds, 3.
Cancrinite, Böggild, 5.
Cancrinite, Clarke and Steiger, 1.
Cancrinite, Tassin, 1.
Cancrinite, Van Hise, 12.
Cancrinite, Whitlock, 1.
Carbonite, Merrill (G. P.), 12.
Carnelian, Simonds, 3.
Carnotite, Hillebrand and Ransome, 1.
Carnotite, Merrill (G. P.), 12.
Carnotite, Phillips (A. H.), 1.
Carphosiderite, Böggild, 5.
Cassiterite, Barlow, 8.
Cassiterite, Böggild, 5.
Cassiterite, Hoffmann, 4.
Cassiterite, Pratt and Sterrett, 1.
Cassiterite, Schaller, 8.
Cassiterite, Simonds, 3.
Cassiterite, Tassin, 1.
Cassiterite, Whitlock, 1.
Catapleiite, Flink, 2.
Catlinite, Tassin, 1.
Celestite, Barbour (E. H.), 8.
Celestite, Glenn, 7.
Celestite, Hoffman, 4.

Minerals described—Continued.
Celestite, Kraus, 2–4.
Celestite, Merrill (G. P.), 12.
Celestite, Rogers, 2, 4.
Celestite, Simonds, 3.
Celestite, Wright (F. E.), 6.
Cerargyrite, Simonds, 3.
Cerargyrite, Whitlock, 1.
Cerite, Merrill (G. P.), 12.
Cerolite, Pratt and Lewis, 1.
Cerussite, Bain, 2.
Cerussite, Grant (U. S.), 5.
Cerussite, Rogers, 4.
Cerussite, Simonds, 3.
Cerussite, Warren, 1.
Cerussite, Weed, 5.
Calamine, Watson (T. L.), 17.
Cerussite, Whitlock, 1.
Chabazite, Böggild, 4, 5.
Chabazite, Clarke and Steiger, 1.
Chabazite, Perry and Emerson, 1
Chabazite, Pratt and Lewis, 1.
Chabazite, Steiger, 2.
Chabazite, Van Hise, 12.
Chabazite, Whitlock, 1.
Chalcanthite, Lindgren, 29.
Chalcanthite, Schaller, 1.
Chalcedony, Böggild, 5.
Chalcedony, Simonds, 3.
Chalcedony, Van Hise, 12.
Chalcocite, Barlow, 8.
Chalcocite, Kemp, 33.
Chalcocite, Lindgren, 29.
Chalcocite, Lindgren and Hillebrand, 1.
Chalcocite, Ransome, 11, 16.
Chalcocite, Simonds, 3.
Chalcocite, Whitlock, 1.
Chalcocite, Winchell (H. V.), 2.
Chalcocite, Wright (F. E.), 6.
Chalcolamprite, Böggild, 5.
Chalcolamprite, Flink, 2.
Chalcopyrite, Bain, 2.
Chalcopyrite, Barlow, 8.
Chalcopyrite, Böggild, 5.
Chalcopyrite, Grant (U. S.), 5.
Chalcopyrite, Kemp, 10.
Chalcopyrite, Kemp, 33.
Chalcopyrite, Lindgren, 29.
Chalcopyrite, Pratt and Lewis, 1.
Chalcopyrite, Ransome, 3, 11, 16.
Chalcopyrite, Richards (R. W.), 1.
Chalcopyrite, Simonds, 3.
Chalcopyrite, Smith (W. S. T.), 3.
Chalcopyrite, Spurr, 3.
Chalcopyrite, Weed, 5.
Chalcopyrite, Whitlock, 1.
Chalcopyrite, Winchell (A. N.), 2.
Chalcopyrite, Wright (F. E.), 6.
Chalcosine, Böggild, 5.
Chert, Bain, 2.
Chert, Glenn, 7.
Chert, Simonds, 3.
Chert, Van Hise, 12.
Chiolite, Böggild, 5.
Chlorastrolite, Farrington, 12.
Chlorite, Blasdale, 1.
Chlorite, Böggild, 5.

Minerals described—Continued.
Chlorite, Buckley, 3.
Chlorite, Lindgren, 29.
Chlorite, Simonds, 3.
Chloritoid, Pratt and Lewis, 1.
Chloritoid, Van Hise, 12.
Chloromelanite, Bauer, 1.
Chloropal, Simonds, 3.
Chloropal, Turner, 4.
Chondrodite, Böggild, 5.
Chondrodite, Tassin, 1.
Chondrodrite, Van Hise, 12.
Chordylite, Böggild, 5.
Chromite, Böggild, 5.
Chromite, Merrill (G. P.), 12.
Chromite, Pratt and Lewis, 1.
Chromite, Van Hise, 12.
Chromite, Whitlock, 1.
Chromium mica, Lindgren, 4.
Chrompicotite, Hoffmann, 5, 6.
Chrysoberyl, Evans (N. N.), 1.
Chrysoberyl, Farrington, 12.
Chrysoberyl, Moses, 1.
Chrysoberyl, Tassin, 1.
Chrysoberyl, Whitlock, 1.
Chrysocolla, Farrington, 12.
Chrysocolla, Hoffmann, 4.
Chrysocolla, Kemp, 33.
Chrysocolla, Lindgren, 29.
Chrysocolla, Lindgren and Hillebrand, 1.
Chrysocolla, Palmer (C. M.), 1.
Chrysocolla, Simonds, 3.
Chrysocolla, Tassin, 1.
Chrysocolla, Whitlock, 1.
Chrysocolla, Wright (F. E.), 6.
Chrysolite, Farrington, 12.
Chrysolite, Pratt and Lewis, 1.
Chrysolite, Whitlock, 1.
Chrysotile, Pratt and Lewis, 1.
Cinnabar, Simonds, 3.
Cinnabar, Whitlock, 1.
Cleveite, Obalski, 2.
Cliftonite, Davison, 1.
Clinochlore, Pratt and Lewis, 1.
Clinochlore, Van Hise, 12.
Clinochlore, Whitlock, 1.
Clinohedrite, Penfield and Foote, 2.
Clinohumite, Van Hise, 12.
Coal, Hoffmann, 4.
Coal, Simonds, 3.
Coal, Tassin, 1.
Cobaltite, Merrill (G. P.), 12.
Cobaltite, Tassin, 1.
Cobaltite, Whitlock, 1.
Cohenite, Böggild, 5.
Colemanite, Eakle, 2.
Colemanite, Merrill (G. P.), 12.
Colemanite, Whitlock, 1.
Columbite, Böggild, 5.
Columbite, Bowman (H. L.), 1.
Columbite, Headden, 4.
Columbite, Merrill (G. P.), 12.
Columbite, Simonds, 3.
Columbite, Whitlock, 1.
Cookeite, Bowman (H. L.), 1.
Copiapite, Schaller, 1.

Minerals described—Continued.
Copper, Bøggild, 5.
Copper, Crook, 1.
Copper, Kemp, 33.
Copper, Lindgren, 29.
Copper, Ransome, 11, 16.
Copper, Whitlock, 1.
Copper, Wright (F. E.), 6.
Copper, native, Hoffmann, 1, 2.
Copper, native, Simonds, 3.
Copper-pitch ore, Lindgren and Hillebrand, 1.
Coquimbite, Eakle, 1.
Coral, precious, Farrington, 12.
Cordierite, Bøggild, 5.
Cordierite, Van Hise, 12.
Cordylite, Flink, 2.
Coronadite, Lindgren, 29.
Coronadite, Lindgren and Hillebrand, 1.
Corundophilite, Van Hise, 12.
Corundum, Bøggild, 5.
Corundum, Crook, 1.
Corundum, Emerson (B. K.), 1.
Corundum, Farrington, 12.
Corundum, Pratt, 2.
Corundum, Pratt and Lewis, 1.
Corundum, Tassin, 1.
Corundum, Van Hise, 12.
Corundum, Whitlock, 1.
Covellite, Kemp, 33.
Crednerite, Simonds, 3.
Crocidolite, Flink, 2.
Crocidolite, Tassin, 1.
Crocidolite, Whitlock, 1.
Crocoite, Whitlock, .
Crocydolite, Bøggild, 5.
Cryolite, Bøggild, 5.
Cryolite, Merrill (G. P.), 12.
Cryolite, Whitlock, 1.
Cryolitionite, Bøggild, 5.
Cryophyllite, Sears, 1.
Crysotile, Willimott, 1.
Cubanite, Barlow, 8.
Cummingtonite, Bøggild, 5.
Cummingtonite, Pratt and Lewis, 1.
Cummingtonite, Van Hise, 12.
Cuprite, Crook, 1.
Cuprite, Hoffmann, 6.
Cuprite, Kemp, 33.
Cuprite, Lindgren, 29.
Cuprite, Ransome, 11.
Cuprite, Simonds, 3.
Cuprite, Whitlock, 1.
Cuprite, Wright (F. E.), 6.
Cuprodescloizite, Headden, 1.
Cyanite, Bøggild, 5.
Cyanite, Farrington, 12.
Cyanite, Pratt and Lewis, 1.
Cyanite, Van Hise, 12.
Cyanite, Whitlock, 1.
Cyanotrichite, Simonds, 3.
Cymatolite, Brush and Dana, 4.
Cyprine, Simonds, 3.
Cyrtolite, Hidden, 1.
Cyrtolite, Luquer, 2.
Cyrtolite, Simonds, 3.

Minerals described—Continued.
Damourite, Tassin, 1.
Danalte, Barlow, 8.
Danalte, Hoffmann, 4.
Danalite, Hoffmann, 2, 4.
Datolite, Clarke and Steiger, 1.
Datolite, Eakle, 1.
Datolite, Hoffmann, 3, 4.
Datolite, Tassin, 1.
Datolite, Whitlock, 1, 4.
Datolite, Wright (F. E.), 6.
Descloizite, Merrill (G. P.), 12.
Descloizite, Weed, 5.
Desmin, Bøggild, 5.
Deweylite, Chester, 1.
Deweylite, Pratt and Lewis, 1.
Diallage, Blasdale, 1.
Diallage, Pratt and Lewis, 1.
Diamond, Crook, 1.
Diamond, Farrington, 12.
Diamond, Hobbs, 4.
Diamond, Merrill (G. P.), 12.
Diamond, Tassin, 1.
Diamond, Whitlock, 1.
Diaspore, Bøggild, 5.
Diaspore, Merrill (G. P.), 12.
Diaspore, Pratt and Lewis, 1.
Diaspore, Tassin, 1.
Diaspore, Van Hise, 12.
Dickinsonite, Brush and Dana, 1, 5.
Diopsid, Whitlock, 1.
Diopside, Bøggild, 5.
Diopside, Farrington, 12.
Diopside, Pratt and Lewis, 1.
Diopside, Tassin, 1.
Diopside, Turner, 4.
Diopside, Van Hise, 12.
Diopside, Weed, 5.
Dioptase, Farrington, 12.
Dioptase, Lindgren, 29.
Dioptase, Lindgren and Hillebrand, 1.
Dioptase, Tassin, 1.
Dioptase, Whitlock, 1.
Dolomite, Bain, 2.
Dolomite, Bøggild, 5.
Dolomite, Buckley, 3.
Dolomite, Crook, 1.
Dolomite, Glenn, 7.
Dolomite, Grant (U. S.), 5.
Dolomite, Merrill (G. P.), 12.
Dolomite, Patton, 2.
Dolomite, Ransome, 16.
Dolomite, Rogers, 5.
Dolomite, Simonds, 3.
Dolomite, Van Hise, 12.
Dolomite, Weed, 5.
Dolomite, Watson (T. L.), 17.
Dolomite, Whitlock, 1.
Domeykite, Koenig, 1, 2.
Domeykite, Wright (F. E.), 6.
Doughtyite, Headden, 4.
Dudleyite, Pratt and Lewis, 1.
Dumortierite, Schaller, 5, 7.
Dumortierite, Tassin, 1.
Durangite, Brush, 4.
Edenite, Pratt and Lewis, 1.
Edenite, Hoffmann, 6.

Minerals described—Continued.
Eglestonite, Moses, 2, 4.
Elæolite, Clarke and Steiger, 1.
Elaterite, Merrill (G. P.), 12.
Elpidite, Böggild, 5.
Elpidite, Flink, 2.
Emerald, Pratt and Lewis, 1.
Emery, Pratt and Lewis, 1.
Emmonsite, Hillebrand, 4, 6.
Enargite, Headden, 4.
Enargite, Kemp, 33.
Enargite, Moses, 5.
Enargite, Ransome, 16.
Enargite, Whitlock, 1.
Endeiolite, Böggild, 5.
Endeiolite, Flink, 2.
Enstatite, Böggild, 5.
Enstatite, Pratt and Lewis, 1.
Enstatite, Simonds, 3.
Enstatite, Tassin, 1.
Enstatite, Van Hise, 12.
Enstatite, Whitlock, 1.
Eosophorite, Brush and Dana, 1, 3.
Epididymite, Böggild, 5.
Epididymite, Flink, 2.
Epidolite, Tassin, 1.
Epidote, Böggild, 5.
Epidote, Farrington, 12.
Epidote, Hoffmann, 4.
Epidote, Lindgren, 29.
Epidote, Palache, 1, 4.
Epidote, Perry and Emerson, 1.
Epidote, Pratt and Lewis, 1.
Epidote, Simonds, 3.
Epidote, Spurr, 3.
Epidote, Van Hise, 12.
Epidote, Weed, 5.
Epidote, Whitlock, 1.
Epidote, Wright (F. E.), 6.
Epistilbite, Van Hise, 12.
Epistolite, Böggild, 5.
Epistolite, Böggild and Winther, 1.
Epsomite, Böggild, 5.
Epsomite, Merrill (G. P.), 12.
Epsomite, Schaller, 1.
Epsomite, Simonds, 3.
Epsomite, Whitlock, 1.
Erikite, Böggild, 2, 5.
Erythrite, Hoffmann, 4.
Erythrite, Whitlock, 1.
Esmeraldaite, Eakle, 1.
Euclase, Farrington, 12.
Euclase, Tassin, 1.
Eudialyte, Böggild, 5.
Eudialyte, Flink, 2.
Eudidymite, Böggild, 5.
Eudidymite, Flink, 2.
Euphyllite, Pratt and Lewis, 1.
Euxenite, Böggild, 5.
Euxenite, Farrington, 12.
Fairfieldite, Brush and Dana, 2, 5.
Fassaite, Simonds, 3.
Faujasite, Hoffmann, 3, 4, 6.
Fayalite, Sears, 1.
Fayalite, Van Hise, 12.
Fayalite, Warren, 1.

Minerals described—Continued.
Fayalite, Weidman, 4.
Feldspar, Buckley, 3.
Feldspar, Farrington, 12.
Feldspar, Ihlseng, 1.
Feldspar, Spurr, 7.
Feldspar, Wright (F. E.), 6.
Fergusonite, Böggild, 5.
Fergusonite, Farrington, 12.
Fergusonite, Hidden, 1.
Fergusonite, Simonds, 3.
Fibroferrite, Headden, 4.
Fibrolite, Perry and Emerson, 1.
Fibrolite, Pratt and Lewis, 1.
Fibrolite, Simonds, 3.
Fillowite, Brush and Dana, 2, 5.
Flint, Simonds, 3.
Fluor, Bowman (H. L.), 1.
Fluorite, Böggild, 5.
Fluorite, Farrington, 12.
Fluorite, Flink, 2.
Fluorite, Glenn, 7.
Fluorite, Hidden, 1.
Fluorite, Merrill (G. P.), 12.
Fluorite, Ransome, 3, 16.
Fluorite, Simonds, 3.
Fluorite, Smith (W. S. T.), 3.
Fluorite, Tassin, 1.
Fluorite, Ulrich and Smith, 1.
Fluorite, Van Hise, 12.
Fluorite, Watson (T. L.), 17.
Fluorite, Whitlock, 1.
Footeite, Ransome, 11.
Forsterite, Van Hise, 12.
Franklinite, Merrill (G. P.), 12.
Franklinite, Simonds, 3.
Franklinite, Whitlock, 1.
Fuchsite, Willimott, 1.
Gadinolite, Hidden, 1.
Gadolinite, Böggild, 5.
Gadolinite, Farrington, 12.
Gadolinite, Merrill (G. P.), 12.
Gadolinite, Simonds, 3.
Gadolinite, Tassin, 1.
Gahnite, Brush, 3.
Gahnite, Pratt and Lewis, 1.
Galena, Bain, 2.
Galena, Crook, 1.
Galena, Glenn, 7.
Galena, Hoffmann, 4.
Galena, Kemp, 10.
Galena, Ransome, 3, 16.
Galena, Rogers, 2.
Galena, Simonds, 3.
Galena, Smith (W. S. T.), 3.
Galena, Spurr, 3.
Galena, Ulrich and Smith, 1.
Galena, Van Hise, 5.
Galena, Weed, 5.
Galena, Whitlock, 1.
Galenite, Böggild, 5.
Galenite, Flink, 2.
Galenite, Grant (U. S.), 5.
Galenite, Watson (T. L.), 17.
Garnet, Blake (W. P.), 16.
Garnet, Clarke and Steiger, 2.
Garnet, Crook, 1.

Minerals described—Continued.
Garnet, Emerson (B. K.), 1.
Garnet, Eyerman, 1.
Garnet, Farrington, 12.
Garnet, Kemp, 10.
Garnet, Kunz, 4.
Garnet, Lindgren, 29.
Garnet, Merrill (G. P.), 12.
Garnet, Pratt and Lewis, 1.
Garnet, Tassin, 1.
Garnet, Villarello, 2.
Garnet, Weed, 5.
Garnet, Whitlock, 1.
Garnet, Wright (F. E.), 6.
Gearksutite, Böggild, 5.
Gedrite, Böggild, 5.
Gedrite, Van Hise, 12.
Gehlenite, Van Hise, 12.
Genthite, Pratt and Lewis, 1.
Gerhardite, Lindgren, 29.
Gerhardite, Lindgren and Hillebrand, 1.
Gersdorfite, Barlow, 8.
Gibbsite, Merrill (G. P.), 12.
Gibbsite, Pratt and Lewis, 1.
Gibbsite, Simonds, 3.
Gibbsite, Van Hise, 12.
Gibbsite, Watson (T. L.), 12.
Gibbsite, Whitlock, 1.
Gieseckite, Böggild, 5.
Gismondite, Van Hise, 12.
Glauberite, Merrill (G. P.), 12.
Glaucochroite, Penfield and Warren, 1.
Glaucodot, Schaller, 8.
Glauconite, Simonds, 3.
Glauconite, Van Hise, 12.
Glaucophane, Van Hise, 12.
Gmelinite, Hoffmann, 4.
Gmelinite, Van Hise, 12.
Goethite, Simonds, 3.
Göthite, Tassin, 1.
Göthite, Whitlock, 1.
Gold, Crook, 1.
Gold, Hurley, 1.
Gold, Merrill (G. P.), 15.
Gold, Ransome, 16.
Gold, Simonds, 3.
Gold, Tassin, 1.
Gold, Weed, 5.
Gold, Whitlock, 1.
Grahamite, Merrill (G. P.), 12.
Grahamite, Simonds, 3.
Granat, Böggild, 5.
Graphite, Böggild, 5.
Graphite, Crook, 1.
Graphite, Flink, 2.
Graphite, Hoffmann, 4.
Graphite, Kemp, 10.
Graphite, Perry and Emerson, 1.
Graphite, Pratt and Lewis, 1.
Graphite, Simonds, 3.
Graphite, Van Hise, 12.
Graphite, Whitlock, 1.
Greenockite, Cornwall, 1.
Greenockite, Smith (W. S. T.), 3.
Greenockite, Whitlock, 1.
Grossularite, Hoffmann, 4.
Grossularite, Simonds, 3.

Minerals described—Continued.
Grossularite, Van Hise, 12.
Grossularite, Whitlock, 1.
Grünerite, Van Hise, 12.
Grünerite, Wright (F. E.), 6.
Guitermanite, Ransome, 16.
Gummite, Simonds, 3.
Gypsum, Barbour (E. H.), 8.
Gypsum, Böggild, 5.
Gypsum, Crook, 1.
Gypsum, Glenn, 7.
Gypsum, Rogers, 4.
Gypsum, Simonds, 3.
Gypsum, Tassin, 1.
Gypsum, Van Hise, 12.
Gypsum, Whitlock, 1.
Gypsum, Wright (F. E.), 6.
Gyrolite, Schaller, 8.
Hæmatite, Böggild, 5.
Hagemannite, Böggild, 5.
Halite, Merrill (G. P.), 12.
Halite, Whitlock, 1.
Halloysite, Schaller, 3, 8.
Halloysite, Watson (T. L.), 12.
Hamlinite, Penfield, 5.
Hancockite, Penfield and Warren, 1.
Hanksite, Pratt, 3.
Harmotome, Van Hise, 12.
Hausmannite, Merrill (G. P.), 12.
Haüynite, Van Hise, 12.
Haüynite, Whitlock, 1.
Hedenbergite, Van Hise, 12.
Hedenbergite, Whitlock, 1.
Hematite, Buckley, 3.
Hematite, Crook, 1.
Hematite, Farrington, 12.
Hematite, Hoffmann, 4.
Hematite, Kraus, 3.
Hematite, McKee, 1.
Hematite, Moses, 5.
Hematite, Pratt and Lewis, 1.
Hematite, Ransome, 16.
Hematite, Simonds, 3.
Hematite, Tassin, 1.
Hematite, Van Hise, 12.
Hematite, Whitlock, 1.
Hematite, Wright (F. E.), 6.
Heulandite, Böggild, 4, 5.
Heulandite, Clarke and Steiger, 1.
Heulandite, Van Hise, 12.
Heulandite, Whitlock, 1.
Hiddenite, Sovereign, 1.
Hiddenite, Schaller, 2.
Hisingerite, Böggild, 5.
Hornblende, Blasdale, 1.
Hornblende, Böggild, 5.
Hornblende, Crook, 1.
Hornblende, Pratt and Lewis, 1.
Hornblende, Schaller, 8.
Hornblende, Tassin, 1.
Hornblende, Van Hise, 12.
Hornblende, Whitlock, 1.
Hortonolite, Brush, 1.
Huebnerite, Hobbs, 28.
Hübnerite, Merrill (G. P.), 12.
Hübnerite, Ransome, 16.
Hudsonite, Weidman, 2.

Minerals described—Continued.
Humite, Van Hise, 12.
Humite, Whitlock, 1.
Hussakite, Kraus and Reitinger, 1.
Hyalite, Simonds, 3.
Hydromagnesite, Hoffmann, 4.
Hydronephelite, Böggild, 5.
Hydronephelite, Hoffmann, 4.
Hydronephelite, Van Hise, 12.
Hydrozincite, Grant (U. S.), 5.
Hydrozincite, Smith (W. S. T.), 3.
Hypersthene, Böggild, 5.
Hypersthene, Crook, 1.
Hypersthene, Farrington, 12.
Hypersthene, Pratt and Lewis, 1.
Hypersthene, Simonds, 3.
Hypersthene, Van Hise, 12.
Hypersthene, Whitlock, 1.
Ilmenite, Böggild, 5.
Ilmenite, Chester, 1.
Ilmenite, Crook, 1.
Ilmenite, Merrill (G. P.), 12.
Ilmenite, Pratt and Lewis, 1.
Ilmenite, Simonds, 3.
Ilmenite, Tassin, 1.
Ilmenite, Van Hise, 12.
Ilmenite, Whitlock, 1.
Ilvaite, Böggild, 1, 5.
Ilvaite, Clarke and Steiger, 1.
Ilvaite, Tassin, 1.
Iodobromite, Blake, 18.
Iolite, Böggild, 5.
Iolite, Farrington, 12.
Iolite, Tassin, 1.
Iolite, Van Hise, 12.
Iolite, Whitlock, 1.
Iron, Böggild, 5.
Isopyre, Tassin, 1.
Ivigtite, Böggild, 5.
Jade, Bauer, 1.
Jade, Farrington, 12.
Jade, Halse, 3.
Jade, Tassin, 1.
Jadeite, Easter, 1.
Jadeite, Whitlock, 1.
Jamesonite, Hoffmann, 4.
Jarosite, Hillebrand and Penfield, 1.
Jarosite, Turner, 4.
Jasper, Simonds, 3.
Jefferisite, Pratt and Lewis, 1.
Jefferisite, Simonds, 3.
Jet, Farrington, 12.
Kämmerite, Pratt and Lewis, 1.
Kaolin, Böggild, 5.
Kaolin, Ihlseng, 1.
Kaolin, Lindgren, 29.
Kaolin, Watson (T. L.), 12.
Kaolinite, Crook, 1.
Kaolinite, Pratt and Lewis, 1.
Kaolinite, Ransome, 16.
Kaolinite, Simonds, 3.
Kaolinite, Smith (W. S. T.), 3.
Kaolinite, Van Hise, 12.
Kaolinite, Whitlock, 1.
Katapleite, Böggild, 5.
Keilhauite, Simonds, 3.
Kerolite, Simonds, 3.

Minerals described—Continued.
Kerrite, Pratt and Lewis, 1.
Keweenawite, Koenig, 2.
Kornerupine, Böggild, 5.
Kunzite, Baskerville, 1.
Kunzite, Baskerville and Kunz, 1.
Kunzite, Davis (R. O. E.), 1.
Kunzite, Sovereign, 1.
Kyanite, Tassin, 1.
Labradorite, Böggild, 5.
Labradorite, Iddings, 4.
Labradorite, Pratt and Lewis, 1.
Labradorite, Simonds, 3.
Labradorite, Tassin, 1.
Labradorite, Van Hise, 12.
Labradorite, Whitlock, 1.
Lampadite, Hoffmann, 6.
Lampadite, Simonds, 3.
Lapis lazuli, Farrington, 12.
Lapis-lazuli, Tassin, 1.
Laumonite, Clarke and Steiger, 1.
Laumontite, Böggild, 4, 5.
Laumontite, Palache, 4.
Laumontite, Van Hise, 12.
Lawsonite, Schaller and Hillebrand, 1, 2.
Lazulite, Pratt and Lewis, 1.
Lazulite, Whitlock, 1.
Lazurite, Merrill (G. P.), 12.
Lazurite, Whitlock, 1.
Lead, Boltwood, 1.
Leadhillite, Rogers, 2.
Ledouxite, Richards (J. W.), 1.
Lepidolite, Bowman (H. L.), 1.
Lepidolite, Farrington, 12.
Lepidolite, Hoffmann, 2, 4.
Lepidolite, Schaller, 6, 8.
Lepidolite, Sovereign, 1.
Lepidolite, Tassin, 1.
Lepidolite, Whitlock, 1.
Lepidolite, Willimott, 1.
Lepidomelane, Harrington (B. J.), 5.
Lesleyite, Pratt and Lewis, 1.
Leuchtenbergite, Clarke and Steiger, 1.
Leucite, Clarke and Steiger, 1.
Leucite, Steiger, 2.
Leucite, Van Hise, 12.
Leucite, Whitlock, 1.
Leucophane, Böggild, 5.
Leucosphenite, Böggild, 5.
Leucosphenite, Flink, 2.
Leucophoenicite, Penfield and Warren, 1.
Levynite, Böggild, 4, 5.
Libethenite, Lindgren, 29.
Libethenite, Lindgren and Hillebrand, 1.
Libethenite, Schaller, 8.
Libethenite, Whitlock, 1.
Lignite, Hoffmann, 4.
Lignite, Simonds, 3.
Limestone, Hoffmann, 4.
Limnite, Simonds, 3.
Limonite, Barbour (E. H.), 8.
Limonite, Böggild, 5.
Limonite, Buckley, 3.

Minerals described—Continued.
Limonite, Crook, 1.
Limonite, Glenn, 7.
Limonite, Hoffmann, 4, 6.
Limonite, Lindgren, 29.
Limonite, Pratt and Lewis, 1.
Limonite, Simonds, 3.
Limonite, Smith (W. S. T.), 3.
Limonite, Van Hise, 12.
Limonite, Whitlock, 1.
Limonite, Wright (F. E.), 6.
Linarite, Rogers, 2.
Linarite, Weed, 5.
Lithiophilite, Brush and Dana, 1, 3.
Lithiophilite, Merrill (G. P.), 12.
Lithomarge, Simonds, 3.
Loellingite, Böggild, 5.
Lorenzenite, Böggild, 5.
Lorenzenite, Flink, 2.
Lucasite, Pratt and Lewis, 1.
Luzonite, Moses, 5.
Mackintoshite, Hidden, 1.
Mackintoshite, Simonds, 3.
Maconite, Pratt and Lewis, 1.
Magnesite, Hoffmann, 4, 6.
Magnesite, Merrill (G. P.), 12.
Magnesite, Pratt and Lewis, 1.
Magnesite, Simonds, 3.
Magnesite, Van Hise, 12.
Magnesite, Whitlock, 1.
Magnetite, Böggild, 5.
Magnetite, Buckley, 3.
Magnetite, Crook, 1.
Magnetite, Flink, 2.
Magnetite, Hoffmann, 6.
Magnetite, Kemp, 36.
Magnetite, Lindgren, 29.
Magnetite, Pratt and Lewis, 1.
Magnetite, Ransome, 4.
Magnetite, Simonds, 3.
Magnetite, Tassin, 1.
Magnetite, Van Hise, 12.
Magnetite, Whitlock, 1.
Magnetite, Wright (F. E.), 6.
Malachite, Böggild, 5.
Malachite, Crook, 1.
Malachite, Farrington, 12.
Malachite, Hoffmann, 6.
Malachite, Kemp, 33.
Malachite, Lindgren, 29.
Malachite, Ransome, 11.
Malachite, Simonds, 3.
Malachite, Smith (W. S. T.), 3.
Malachite, Tassin, 1.
Malachite, Weed, 5.
Malachite, Whitlock, 1.
Malacolite, Whitlock, 1.
Maltha, Crook, 1.
Manganite, Merrill (G. P.), 12.
Manganite, Whitlock, 1.
Manganite, Wright (F. E.), 6.
Marcasite, Bain, 2.
Marcasite, Barlow, 8.
Marcasite, Chester, 1.
Marcasite, Crook, 1.
Marcasite, Grant (U. S.), 5.
Marcasite, Ihlseng, 1.
Marcasite, Julien, 5.
Marcasite, Smith (W. S. T.), 3.
Marcasite, Stokes, 1.
Marcasite, Tassin, 1.
Marcasite, Van Hise, 5, 12.
Marcasite, Whitlock, 1, 4.
Margarite, Pratt and Lewis, 1.
Margarite, Simonds, 3.
Margarite, Van Hise, 12.
Margarodite, Simonds, 3.
Marialite, Van Hise, 12.
Marionite, Branner, 3.
Marmolite, Pratt and Lewis, 1.
Martite, Farrington, 13.
Martite, Simonds, 3.
Martite, Wright (F. E.), 6.
Masonite, Wright (F. E.), 6.
Massicot, Simonds, 3.
Meionite, Pratt and Lewis, 1.
Meionite, Van Hise, 12.
Melacomite, Spurr, 3.
Melanconite, Hoffmann, 6.
Melanconite, Kemp, 33.
Melanconite, Simonds, 3.
Melanite, Simonds, 3.
Melanite, Van Hise, 12.
Melanochalcite, Koenig, 2.
Melanochalcite, Ransome, 11.
Melanterite, Böggild, 5.
Melanterite, Crook, 1.
Melanterite, Schaller, 1.
Melanterite, Simonds, 3.
Melilite, Böggild, 5.
Melilite, Van Hise, 12.
Menaccanite, Merrill (G. P.), 12.
Menaccanite, Pratt and Lewis, 1.
Menaccanite, Whitlock, 1.
Mercury, Simonds, 3.
Mercury, Whitlock, 1.
Mesolite, Böggild, 4, 5.
Mesolite, Steiger, 2.
Mesolite, Van Hise, 12.
Metacinnabarite, Simonds, 3.
Metagadolinite, Simonds, 3.
Meteoric iron, Pratt, 1.
Meteoric iron, Simonds, 3.
Meteorite, Angermann, 3.
Meteorite, Aguilera, 4.
Meteorite, Barbour (E. H.), 3, 4, 8.
Meteorite, Borgström, 1.
Meteorite, Brezina, 1.
Meteorite, Brezina and Cohen, 1.
Meteorite, Campbell and Howe, 1.
Meteorite, Charlton, 1.
Meteorite, Cohen, 1–8.
Meteorite, Farrington, 1–4, 6–8, 9–11, 16.
Meteorite, Glenn, 3.
Meteorite, Hills, 3.
Meteorite, Hobbs, 13, 15.
Meteorite, Hovey (E. O.), 42.
Meteorite, Johnston (R. A. A.), 3.
Meteorite, Klein, 2.
Meteorite, Kunz, 9, 10.
Meteorite, Merrill (G. P.), 2, 4, 7.
Meteorite, Merrill and Stokes, 1.

Minerals described—Continued.
Meteorite, Miller (A. M.), 2, 3.
Meteorite, Tassin, 4.
Meteorite, Preston (H. L.), 1–3, 4.
Meteorite, Tassin, 2, 3, 5.
Meteorite, Ward (H. A.), 1–10, 12.
Meteorite, Winchell (N. H.), 28, 29.
Meteorite, Wuensch, 1.
Mica, Buckley, 3.
Mica, Ihlseng, 1.
Mica, Schwartz, 1.
Microcline, Böggild, 5.
Microcline, Bowman (H. L.), 1.
Microcline, Crook, 1.
Microcline, Simonds, 3.
Microcline, Tassin, 1.
Microcline, Van Hise, 12.
Microcline, Weed, 5.
Microcline, Whitlock, 1.
Microlite, Böggild, 5.
Microlite, Bowman (H. L.), 1.
Microlite, Flink, 2.
Microlite, Tassin, 1.
Microperthite, Crook, 1.
Millerite, Barlow, 8.
Millerite, Crook, 1.
Millerite, Palache and Wood, 1.
Millerite, Whitlock, 1.
Mimetite, Whitlock, 1.
Mirabilite, Merrill (G. P.), 12.
Mitchellite, Pratt and Lewis, 1.
Mohawkite, Koenig, 1, 2.
Mohawkite, Richards (J. W.), 1.
Moldavite, Farrington, 12.
Molybdenite, Böggild, 5.
Molybdenite, Crook, 3.
Molybdenite, Hoffmann, 4.
Molybdenite, Merrill (G. P.), 12.
Molybdenite, Moses, 3.
Molybdenite, Ransome, 16.
Molybdenite, Simonds, 3.
Molybdenite, Spurr, 3.
Molybdenite, Wright (F. E.), 6.
Monazite, Hoffmann, 4.
Monazite, Böggild, 5.
Monazite, Merrill (G. P.), 12.
Monazite, Turner, 4, 7.
Monazite, Whitlock, 1.
Montroydite, Moses, 2, 4.
Mordenite, Pirsson, 2.
Morencite, Lindgren, 29.
Morencite, Lindgren and Hillebrand, 1.
Morenosite, Barlow, 8.
Muscovite, Böggild, 5.
Muscovite, Bowman (H. L.), 1.
Muscovite, Crook, 1.
Muscovite, Lindgren, 29.
Muscovite, Pratt and Lewis, 1.
Muscovite, Simonds, 3.
Muscovite, Van Hise, 12.
Muscovite, Whitlock, 1.
Muscovite, Wright (F. E.), 6.
Narsarsukite, Böggild, 5.
Narsarsukite, Flink, 2.
Nasonite, Penfield and Warren, 1.
Natrojarosite, Hillebrand and Penfield, 1.

Minerals described—Continued.
Natrolite, Böggild, 4, 5.
Natrolite, Clarke and Steiger, 1.
Natrolite, Eyerman, 1.
Natrolite, Flink, 2.
Natrolite, Harrington (B. J.), 5.
Natrolite, Steiger, 2.
Natrolite, Tassin, 1.
Natrolite, Van Hise, 12.
Natrolite, Whitlock, 1.
Natron, Hoffmann, 1.
Natronmicrocline, Böggild, 5.
Natronorthoclase, Böggild, 5.
Natrophilite, Brush and Dana, 5.
Natural gas, Crook, 1.
Nepheline, Böggild, 5.
Nepheline, Harrington (B. J.), 5.
Nephelite, Pratt and Lewis, 1.
Nephelite, Van Hise, 12.
Nephelite, Whitlock, 1.
Nephrite, Easter, 1.
Nephrite, Whitlock, 1.
Neptunite, Böggild, 5.
Neptunite, Flink, 2.
Newberryite, Hoffmann, 2, 4.
Niccolite, Barlow, 8.
Niccolite, Whitlock, 1.
Nickel, Simonds, 3.
Nitre, Simonds, 3.
Nivenite, Hidden, 1.
Nivenite, Simonds, 3.
Northupite, Penfield and Jamieson, 1.
Northupite, Pratt, 3.
Noselite, Van Hise, 12.
Obsidian, Halse, 3.
Obsidian, Kunz, 4.
Obsidian, Farrington, 12.
Obsidian, Tassin, 1.
Ochre, Simonds, 3.
Octahedrite, Robinson (H. A.), 1.
Octahedrite, Tassin, 1.
Octahedrite, Van Hise, 12.
Odontolite, Tassin, 1.
Okenite, Böggild, 5.
Oligoclase, Böggild, 5.
Oligoclase, Clarke and Steiger, 1.
Oligoclase, Iddings, 4.
Oligoclase, Pratt and Lewis, 1.
Oligoclase, Simonds, 3.
Oligoclase, Tassin, 1.
Oligoclase, Van Hise, 12.
Oligoclase, Whitlock, 1.
Olivenite, Whitlock, 1.
Olivine, Buckley, 3.
Olivine, Clarke and Steiger, 1.
Olivine, Tassin, 1.
Olivine, Van Hise, 12.
Onyx, Kunz, 4.
Onyx, Simonds, 3.
Opal, Farrington, 12.
Opal, Halse, 3.
Opal, Simonds, 3.
Opal, Tassin, 1.
Opal, Van Hise, 12.
Opal, Whitlock, 1.
Orpiment, Whitlock, 1.
Orthoclase, Clarke and Steiger, 1.

Minerals described—Continued.
Orthoclase, Crook, 1.
Orthoclase, Eyerman, 1.
Orthoclase, Simonds, 3.
Orthoclase, Tassin, 1.
Orthoclase, Van Hise, 12.
Orthoclase, Whitlock, 1.
Osteolite, Whitlock, 1.
Ottrelite, Van Hise, 12.
Pachnolite, Bøggild, 5.
Painterite, Pratt and Lewis, 1.
Palacheite, Eakle, 3, 4.
Palladium, Headden, 4.
Paragonite, Bøggild, 5.
Paragonite, Pratt and Lewis, 1.
Paragonite, Van Hise, 12.
Parankerite, Van Hise, 12.
Paranthite, Pratt and Lewis, 1.
Parisite, Flink, 2.
Pattersonite, Pratt and Lewis, 1.
Pearceite, Penfield, 4.
Pearl, Farrington, 12.
Pectolite, Bøggild, 5.
Pectolite, Clarke and Steiger, 1.
Pectolite, Eakle, 1.
Pectolite, Moses, 1.
Pectolite, Steiger, 2.
Pectolite, Van Hise, 12.
Pectolite, Whitlock, 1.
Pegmatite, Tassin, 1.
Penninite, Pratt and Lewis, 1.
Penninite, Simonds, 3.
Penninite, Van Hise, 12.
Pentlandite, Barlow, 8.
Perovskite, Bøggild, 5.
Perovskite, Van Hise, 12.
Petroleum, Crook, 1.
Petroleum, Glenn, 7.
Petroleum, Simonds, 3.
Petroleum, Whitlock, 1.
Phenacite, Farrington, 12.
Phenacite, Tassin, 1.
Phenacite, Whitlock, 1.
Phillipsite, Bøggild, 5.
Phillipsite, Van Hise, 12.
Phlogopite, Bøggild, 5.
Phlogopite, Clarke and Steiger, 1.
Phlogopite, Crook, 1.
Phlogopite, McNairn, 1.
Phlogopite, Osann, 2.
Phlogopite, Simonds, 3.
Phlogopite, Van Hise, 12.
Phlogopite, Whitlock, 1.
Phosgenite, Warren, 1.
Phosphate, Glenn, 7.
Phosphorite, Whitlock, 1.
Pickeringite, Bøggild, 5.
Picotite, Pratt and Lewis, 1.
Picrolite, Pratt and Lewis, 1.
Piedmontite, Van Hise, 12.
Pigeonite, Winchell (A. N.), 3.
Pirssonite, Pratt, 3.
Pisanite, Schaller, 1, 3, 8.
Pitch blende, Simonds, 3.
Plagioclase, Crook, 1.
Platinum, Dickson, 3.
Platinum, Kemp, 11.
Platinum, Simonds, 3.
Platinum, Whitlock, 1.
Plumbojarosite, Hillebrand and Penfield, 1.
Pollanite, Merrill (G. P.), 12.
Pollucite, Clarke and Steiger, 1.
Pollucite, Wells, 2.
Polybasite, Ransome, 16.
Polycrase, Farrington, 12.
Polydymite, Barlow, 8.
Prehnite, Bøggild, 5.
Prehnite, Clarke and Steiger, 1.
Prehnite, Eyerman, 1.
Prehnite, Farrington, 12.
Prehnite, Perry and Emerson, 1.
Prehnite, Schaller, 8.
Prehnite, Tassin, 1.
Prehnite, Van Hise, 12.
Prehnite, Whitlock, 1.
Prehnite, Wright (F. E.), 6.
Pribramite, Simonds, 3.
Prochlorite, Eyerman, 1.
Prochlorite, Perry and Emerson, 1.
Prochlorite, Pratt and Lewis, 1.
Prochlorite, Van Hise, 12.
Prochlorite, Whitlock, 1.
Proustite, Ransome, 16.
Proustite, Whitlock, 1.
Pseudomalachite, Simonds, 3.
Psilomelane, Merrill (G. P.), 12.
Psilomelane, Simonds, 3.
Psilomelane, Whitlock, 1.
Pureaulite, Brush and Dana, 5.
Purpurite, Graton and Schaller, 1.
Pyrargyrite, Whitlock, 1.
Pyrite, Bain, 2.
Pyrite, Barbour (E. H.), 8.
Pyrite, Barlow, 8.
Pyrite, Bøggild, 5.
Pyrite, Buckley, 3.
Pyrite, Crook, 1.
Pyrite, Farrington, 12.
Pyrite, Glenn, 7.
Pyrite, Grant (U. S.), 5.
Pyrite, Ihlseng, 1.
Pyrite, Julien, 5.
Pyrite, Kemp, 10.
Pyrite, Kunz, 4.
Pyrite, Lindgren, 29.
Pyrite, Nicol, 1.
Pyrite, Palache, 4.
Pyrite, Pratt and Lewis, 1.
Pyrite, Ransome, 3, 11, 16.
Pyrite, Rogers, 2, 4.
Pyrite, Schaller, 1, 8.
Pyrite, Simonds, 3.
Pyrite, Smith (W. S. T.), 3.
Pyrite, Smyth (C. H.), 6.
Pyrite, Spurr, 3.
Pyrite, Stokes, 1.
Pyrite, Tassin, 1.
Pyrite, Van Hise, 12.
Pyrite, Weed, 5.
Pyrite, Whitlock, 1, 4.
Pyrite, Wright (F. E.), 6.
Pyrites, Merrill (G. P.), 12.

Minerals described—Continued.

- Pyroaurite, Simonds, 3.
- Pyrolusite, Barbour (E. H.), 8.
- Pyrolusite, Merrill (G. P.), 12.
- Pyrolusite, Simonds, 3.
- Pyrolusite, Weed, 5.
- Pyrolusite, Whitlock, 1.
- Pyrolusite, Wright (F. E.), 6.
- Pyromorphite, Smith (W. S. T.), 3.
- Pyromorphite, Turner, 4, 7.
- Pyromorphite, Whitlock, 1.
- Pyrope, Van Hise, 12.
- Pyrope, Whitlock, 1.
- Pyrophyllite, Clarke and Steiger, 1.
- Pyrophyllite, Merrill (G. P.), 12.
- Pyrophyllite, Pratt and Lewis, 1.
- Pyrophyllite, Whitlock, 1.
- Pyroxene, Buckley, 3.
- Pyroxene, Ihlseng, 1.
- Pyroxene, Kemp, 10.
- Pyroxene, Lindgren, 29.
- Pyroxene, Moses, 1.
- Pyroxene, Osann, 2.
- Pyroxene, Pratt and Lewis, 1.
- Pyroxene, Simonds, 3.
- Pyroxene, Whitlock, 1.
- Pyroxene, Winchell (A. N.), 3.
- Pyrrhotin, Böggild, 5.
- Pyrrhotite, Barlow, 8.
- Pyrrhotite, Hoffmann, 6.
- Pyrrhotite, Kemp, 10.
- Pyrrhotite, Perry and Emerson, 1.
- Pyrrhotite, Spurr, 3.
- Pyrrhotite, Van Hise, 12.
- Pyrrhotite, Weed, 5.
- Pyrrhotite, Whitlock, 1.
- Quartz, Böggild, 4, 5.
- Quartz, Bowman (H. L.), 1.
- Quartz, Buckley, 3.
- Quartz, Crook, 1.
- Quartz, Farrington, 12.
- Quartz, Flink, 2.
- Quartz, Glenn, 7.
- Quartz, Grant (U. S.), 5.
- Quartz, Hobbs, 28.
- Quartz, Ihlseng, 1.
- Quartz, Kemp, 10.
- Quartz, Lindgren, 29.
- Quartz, Merrill (G. P.), 12.
- Quartz, Osann, 2.
- Quartz, Pratt and Lewis, 1.
- Quartz, Ransome, 5, 16.
- Quartz, Rogers, 4.
- Quartz, Simonds, 3.
- Quartz, Smith (W. S. T.), 3.
- Quartz, Smyth (C. H.), 6.
- Quartz, Spurr, 3.
- Quartz, Tassin, 1.
- Quartz, Van Hise, 12.
- Quartz, Waring, 1.
- Quartz, Weed, 5.
- Quartz, Whitlock, 1, 4.
- Quartz, Wright (F. E.), 6.
- Quartz gems, Kunz, 4.
- Quartz pseudomorph, Schaller, 3.
- Ralstonite, Böggild, 5.
- Realgar, Merrill (G. P.), 12.

Minerals described—Continued.

- Realgar, Moses, 1.
- Realgar, Spurr, 3.
- Realgar, Whitlock, 1.
- Reddingite, Brush and Dana, 1, 5.
- Retinite, Böggild, 5.
- Rhodocrosite, Böggild, 5.
- Rhodochrosite, Flink, 2.
- Rhodochrosite, Ransome, 3, 16.
- Rhodochrosite, Whitlock, 1.
- Rhodolite, Pratt and Lewis, 1.
- Rhodonite, Farrington, 12.
- Rhodonite, Merrill (G. P.), 12.
- Rhodonite, Palache, 4.
- Rhodonite, Ransome, 16.
- Rhodonite, Tassin, 1.
- Rhodonite, Whitlock, 1.
- Rickardite, Ford (W. E.), 2.
- Riebeckite, Böggild, 5.
- Riebeckite (?), Clarke and Steiger, 1.
- Riebeckite, Van Hise, 12.
- Rinkite, Böggild, 5.
- Roscoelite, Hillebrand and Ransome, 1.
- Roscoelite, Lindgren, 3, 4.
- Rowlandite, Simonds, 3.
- Rubrite, Eakle, 4.
- Ruby, Pratt and Lewis, 1.
- Rutile, Böggild, 5.
- Rutile, Crook, 1.
- Rutile, Farrington, 12.
- Rutile, Hoffmann, 6.
- Rutile, Kemp, 10.
- Rutile, Merrill (G. P.), 12.
- Rutile, Pratt and Lewis, 1.
- Rutile, Tassin, 1.
- Rutile, Van Hise, 12.
- Rutile, Whitlock, 1.
- Sagenitic quartz, Simonds, 3.
- Sahlite, Van Hise, 12.
- Salt, rock, Simonds, 3.
- Samarskite, Farrington, 12.
- Samarskite, Merrill (G. P.), 12.
- Samarskite, Simonds, 3.
- Samarskite, Tassin, 1.
- Sapphire, Pratt and Lewis, 1.
- Sapphirine, Böggild, 5.
- Sardonyx, Simonds, 3.
- Scapolite, Böggild, 5.
- Scapolite, Osann, 2.
- Scapolite, Tassin, 1.
- Scheelite, Atkin, 3.
- Scheelite, Hobbs, 5.
- Scheelite, Lindgren, 4.
- Scheelite, Merrill (G. P.), 12.
- Scheelite, Whitlock, 1.
- Schizolite, Böggild, 2, 5.
- Schizolite, Böggild and Winther, 1.
- Schorlomite, Hoffmann, 2, 4.
- Schreibersite, Böggild, 5.
- Scolecite, Böggild, 5.
- Scolecite, Clarke and Steiger, 1.
- Scolecite, Steiger, 2.
- Scolecite, Van Hise, 12.
- Seladonite, Böggild, 5.
- Selenite, Grant (U. S.), 5.
- Selenite, Rowe, 3.
- Selenite, Whitlock, 1.

Minerals described—Continued.
Sepiolite, Merrill (G. P.), 12.
Sepiolite, Pratt and Lewis, 1.
Sepiolite, Whitlock, 1.
Sericite, Hoffmann, 4.
Serpentine, Böggild, 5.
Serpentine, Clarke and Steiger, 1.
Serpentine, Crook, 1.
Serpentine, Eyerman, 1.
Serpentine, Farrington, 12.
Serpentine, Lindgren, 29.
Serpentine, Pratt and Lewis, 1.
Serpentine, Simonds, 3.
Serpentine, Tassin, 1.
Serpentine, Van Hise, 12.
Serpentine, Weed, 5.
Serpentine, Whitlock, 1.
Serpentine, Willimott, 1.
Siderite, Böggild, 5.
Siderite, Crook, 1.
Siderite, Hoffmann, 4.
Siderite, Simonds, 3.
Siderite, Van Hise, 12.
Siderite, Whitlock, 1.
Siderolite, Whitlock, 1.
Sillimanite, Pratt and Lewis, 1.
Sillimanite, Van Hise, 12.
Sillimanite, Whitlock, 1.
Silver, Böggild, 5.
Silver, Crook, 2.
Silver, Hoffmann, 4, 16.
Silver, Weed, 5.
Silver, Whitlock, 1.
Silver, native, Simonds, 3.
Smaltite, Barlow, 8.
Smaltite, Whitlock, 1.
Smithsonite, Bain, 2.
Smithsonite, Branner, 2.
Smithsonite, Farrington, 12.
Smithsonite, Grant (U. S.), 5.
Smithsonite, Smith (W. S. T.), 3.
Smithsonite, Tassin, 1.
Smithsonite, Watson (T. L.), 17.
Smithsonite, Weed, 5.
Smithsonite, Whitlock, 1.
Sodalite, Böggild, 5.
Sodalite, Clarke and Steiger, 1.
Sodalite, Pratt and Lewis, 1.
Sodalite, Tassin, 1.
Sodalite, Van Hise, 12.
Sodalite, Whitlock, 1.
Sodalite syenite (ditroite), Bonney, 1.
Souesite, Hoffmann, 7.
Spangolite, Lindgren, 29.
Spangolite, Lindgren and Hillebrand, 1.
Spangolite, Penfield, 3.
Specularite, Ransome, 3, 16.
Sperrylite, Barlow, 8.
Sperrylite, Goldschmidt and Nicol, 1.
Sperrylite, Wells, 1.
Sperrylite, Wells and Penfield, 1.
Spessartite, Hoffmann, 4.
Spessartite, Kunz, 8.
Spessartite, Simonds, 3.
Spessartite, Van Hise, 12.
Spessartite, Whitlock, 1.
Sphalerite, Bain, 2.

Minerals described—Continued.
Sphalerite, Böggild, 5.
Sphalerite, Branner, 2.
Sphalerite, Crook, 2.
Sphalerite, Eakle, 6.
Sphalerite, Flink, 2.
Sphalerite, Glenn, 7.
Sphalerite, Grant (U. S.), 5.
Sphalerite, Hoffmann, 4.
Sphalerite, Lindgren, 29.
Sphalerite, Ransome, 3, 11, 16.
Sphalerite, Simonds, 3.
Sphalerite, Smith (W. S. T.), 3.
Sphalerite, Ulrich and Smith, 1.
Sphalerite, Van Hise, 5.
Sphalerite, Watson (T. L.), 17.
Sphalerite, Whitlock, 1.
Spinel, Böggild, 5.
Spinel, Farrington, 12.
Spinel, Pratt and Lewis, 1.
Spinel, Tassin, 1.
Spinel, Van Hise, 12.
Spinel, Whitlock, 1.
Spodiophyllite, Böggild, 5.
Spodiophyllite, Flink, 2.
Spodumene, Baskerville, 1.
Spodumene, Brush and Dana, 4.
Spodumene, Farrington, 12.
Spodumene, Hoffmann, 2, 4.
Spodumene, Kunz, 7.
Spodumene, Merrill (G. P.), 12.
Spodumene, Schaller, 2.
Spodumene, Sovereign, 1.
Spodumene, Tassin, 1.
Spodumene, Van Hise, 12.
Spodumene, Whitlock, 1.
Staurolite, Böggild, 5.
Staurolite, Farrington, 12.
Staurolite, Pratt and Lewis, 1.
Staurolite, Tassin, 1.
Staurolite, Van Hise, 12.
Staurolite, Whitlock, 1.
Steatite, Merrill (G. P.), 12.
Steenstrupine, Böggild, 5.
Steenstrupite, Böggild and Winther, 1.
Stephanite, Whitlock, 1.
Stibnite, Hoffmann, 4.
Stibnite, Lindgren, 24.
Stibnite, Ransome, 16.
Stibnite, Spurr, 3.
Stibnite, Whitlock, 1.
Stilbite, Böggild, 4, 5.
Stilbite, Clarke and Steiger, 1.
Stilbite, Everman, 1.
Stilbite, Perry and Emerson, 1.
Stilbite, Steiger, 2.
Stilbite, Van Hise, 12.
Stilbite, Whitlock, 1.
Stromeyerite, Ransome, 16.
Stromeyerite, Simonds, 3.
Strontianite, Merrill (G. P.), 12.
Strontianite, Simonds, 3.
Strontianite, Whitlock, 1.
Strontianite, Wright (F. E.), 6.
Struvite, Hoffmann, 2, 4.
Sulfur, Whitlock, 1.
Sulphur, Böggild, 5.

Minerals described—Continued.
Sulphur, Crook, 1.
Sulphur, Grant (U. S.), 5.
Sulphur, native, Simonds, 3.
Sussexite, Brush, 2.
Sylvanite, Moses, 5.
Sylvanite, Whitlock, 1.
Synchysite, Böggild, 5.
Tainiolite, Böggild, 5.
Tainiolite, Flink, 2.
Talc, Böggild, 5.
Talc, Crook, 1.
Talc, Pratt and Lewis, 1.
Talc, Simonds, 3.
Talc, Van Hise, 12.
Talc, Whitlock, 1.
Tantalite, Merrill (G. P.), 12.
Tantalite, Whitlock, 1.
Tellurite, Headden, 1.
Tellurite, Schaller, 8.
Tellurium, Headden, 1.
Tellurium, native, Hoffmann, 6.
Tengerite, Hidden, 1.
Tengerite, Simonds, 3.
Tenorite, Ransome, 11.
Tephroite, Simonds, 3.
Terlinguaite, Moses, 2, 4.
Tetradymite, Hillebrand, 6.
Tetradymite, Weed, 5.
Tetrahedrite, Chester, 1.
Tetrahedrite, Kemp, 33.
Tetrahedrite, Ransome, 3, 16.
Tetrahedrite, Simonds, 3.
Tetrahedrite, Weed, 5.
Tetrahedrite, Whitlock, 1.
Thalénite, Hillebrand, 2, 6.
Thenardite, Böggild, 5.
Thenardite, Merrill (G. P.), 12.
Thomsenolite, Böggild, 5.
Thomsonite, Böggild, 4, 5.
Thomsonite, Clarke and Steiger, 1.
Thomsonite, Farrington, 12.
Thomsonite, Steiger, 2.
Thomsonite, Tassin, 1.
Thomsonite, Van Hise, 12.
Thorium, Boltwood, 1.
Thorogummite, Hidden, 1.
Thorogummite, Simonds, 3.
Titanite, Böggild, 5.
Titanite, Farrington, 12.
Titanite, Osann, 2.
Titanite, Simonds, 3.
Titanite, Tassin, 1.
Titanite, Van Hise, 12.
Titanite, Whitlock, 1.
Topaz, Farrington, 12.
Topaz, Kunz, 4, 8.
Topaz, Rogers, 2.
Topaz, Schaller, 8.
Topaz, Simonds, 3.
Topaz, Tassin, 1.
Topaz, Van Hise, 12.
Topaz, Whitlock, 1.
Torbernite, Simonds, 3.
Torbernite, Whitlock, 1.
Tourmalin, Whitlock, 1.
Tourmaline, Böggild, 5.

Minerals described—Continued.
Tourmaline, Bowman (H. L.), 1.
Tourmaline, Crook, 1.
Tourmaline, Eyerman, 1.
Tourmaline, Farrington, 12.
Tourmaline, Kunz, 3.
Tourmaline, Pratt and Lewis, 1.
Tourmaline, Schaller, 4.
Tourmaline, Simonds, 3.
Tourmaline, Smyth (C. H.), 3.
Tourmaline, Sterrett, 1.
Tourmaline, Tassin, 1.
Tourmaline, Van Hise, 12.
Tourmaline, Weed, 5.
Tourmaline, Wright (F. E.), 6.
Travertine, Simonds, 3.
Tremolite, Blasdale, 1.
Tremolite, Böggild, 5.
Tremolite, Hoffmann, 6.
Tremolite, Simonds, 3.
Tremolite, Van Hise, 12.
Tremolite, Whitlock, 1.
Tridymite, Schaller, 8.
Tridymite, Van Hise, 12.
Triphylite, Merrill (G. P.), 12.
Triploidite, Brush and Dana, 1.
Troilite, Böggild, 5.
Turgite, Simonds, 3.
Turquoise, Farrington, 12.
Turquoise, Halse, 3.
Turquois, Kunz, 4.
Turquois, Simonds, 3.
Turquois, Tassin, 1.
Turquois, Whitlock, 1.
Tychite, Penfield and Jamieson, 1.
Tysonite, Allen and Comstock, 1.
Uintaite, Merrill (G. P.), 12.
Uintaite, Whitlock, 1.
Ulexite, Merrill (G. P.), 12.
Ulexite, Whitlock, 1.
Uralite?, Simonds, 3.
Uralorthite, Simonds, 3.
Uraninite, Boltwood, 1.
Uraninite, Simonds, 3.
Uraninite, Whitlock, 1.
Uranium, Simonds, 3.
Uranochre, Simonds, 3.
Uranophane, Hoffmann, 2, 4.
Uranophane, Watson (T. L.), 7.
Urantite, Merrill (G. P.), 12.
Uvarovite, Hoffmann, 6.
Uvarovite, Van Hise, 12.
Uvarovite, Whitlock, 1.
Vanadinite, Merrill (G. P.), 12.
Vanadinite, Schaller, 8.
Vanadinite, Whitlock, 1.
Variscite, Farrington, 12.
Variscite, Tassin, 1.
Vermiculite, Chester, 1.
Vermiculite, Perry and Emerson, 1.
Vermiculite, Simonds, 3.
Vermiculites, Crook, 1.
Vesuvianite, Böggild, 5.
Vesuvianite, Clarke and Steiger, 2.
Vesuvianite, Farrington, 12.
Vesuvianite, Moses, 1.
Vesuvianite, Rogers, 4.

Minerals described—Continued.
- Vesuvianite, Simonds, 3.
- Vesuvianite, Tassin, 1.
- Vesuvianite, Turner, 4.
- Vesuvianite, Van Hise, 12.
- Vesuvianite, Whitlock, 1.
- Villarsite, Pratt and Lewis, 1.
- Vivianite, Turner, 7.
- Vivianite, Whitlock, 1.
- Wad, Simonds, 3.
- Wad, Smith (W. S. T.), 3.
- Wavellite, Whitlock, 1.
- Wellsite, Pratt and Foote, 1.
- Wellsite, Pratt and Lewis, 1.
- Wernerite, Van Hise, 12.
- Wernerite, Whitlock, 1.
- Willcoxite, Pratt and Lewis, 1.
- Willemite, Böggild, 5.
- Willemite, Lindgren, 29.
- Willemite, Lindgren and Hillebrand, 1.
- Willemite, Tassin, 1.
- Willemite, Whitlock, 1.
- Williamsite, Pratt and Lewis, 1.
- Wilsonite, Hoffmann, 4.
- Witherite, Merrill (G. P.), 12.
- Witherite, Whitlock, 1.
- Wocheinite, Simonds, 3.
- Wolframite, Böggild, 5.
- Wolframite, Hobbs, 5.
- Wolframite, Irving, 1.
- Wolframite, Merrill (G. P.), 12.
- Wolframite, Moses, 5.
- Wolframite, Simonds, 3.
- Wolframite, Whitlock, 1.
- Wollastonite, Böggild, 5.
- Wollastonite, Clarke and Steiger, 1.
- Wollastonite, Collins (H. F.), 1.
- Wollastonite, Simonds, 3.
- Wollastonite, Van Hise, 12.
- Wollastonite, Weed, 5.
- Wollastonite, Whitlock, 1.
- Wulfenite, Simonds, 3.
- Wulfenite, Whitlock, 1.
- Wurtzillite, Merrill (G. P.), 12.
- Xanthophyllite, Clarke and Steiger, 1.
- Xenotime, Kraus and Reitinger, 1.
- Yttrialite, Hidden, 1.
- Yttrialite, Hillebrand, 2, 7.
- Yttrialite, Simonds, 3.
- Yttrocerite, Böggild, 5.
- Yttrotantalite, Merrill (G. P.), 12.
- Zaratite, Böggild, 5.
- Zinc-blende, Eakle and Sharwood, 1.
- Zincblende, Kemp, 10.
- Zincite, Whitlock, 1.
- Zinkenite, Ransome, 16.
- Zinnwaldite, Böggild, 5.
- Zinnwaldite (Polylithionite), Flink, 2.
- Zinnwaldite, Schaller, 8.
- Zircon, Böggild, 5.
- Zircon, Eakle, 1.
- Zircon, Farrington, 12.
- Zircon, Flink, 2.
- Zircon, Merrill (G. P.), 12.
- Zircon, Osann, 2.
- Zircon, Perry and Emerson, 1.
- Zircon, Pratt and Lewis, 1.

Minerals described—Continued.
- Zircon, Tassin, 1.
- Zircon, Van Hise, 12.
- Zircon, Whitlock, 1.
- Zoisite, Farrington, 12.
- Zoisite, Kemp, 10.
- Zoisite, Pratt and Lewis, 1.
- Zoisite, Simonds, 3.
- Zoisite, Van Hise, 12.
- Zunyite, Ransome, 16.

Minnesota.
- Age of St. Croix Dalles, Upham, 31.
- Baraboo iron ore, Winchell (N. H.), 23.
- Casselton-Fargo folio, Hall and Willard, 1.
- Cement materials and industry of the United States, Eckel, 34.
- Comment on report of special committee on Lake Superior, Lane, 47.
- Constituents of Minnesota soils, Hall (C. W.), 2.
- Dalles of the St. Croix, Berkey, 1.
- Deep wells as a source of water supply for Minneapolis, Winchell (N. H.), 27.
- Eisenerzlagerstätten am Lake Superior, Macco, 1.
- Étude mineralogique et petrographique des roches gabbroiques de l'Etat de Minnesota, Winchell (A. N.), 1.
- Geography and geology of Minnesota, Hall (C. W.), 6.
- Geologic work in Lake Superior iron district, Leith, 5.
- Geological atlas with synoptical descriptions, Winchell (N. H.), 2.
- Geological history of the Vermilion iron-bearing district, Clements, 7.
- Geology and mines of Lake Superior copper district, Stevens (H. J.), 1.
- Geology and underground water resources of the central Great Plains, Darton, 18.
- Geology of a new iron district in Minnesota, Thomas, 4.
- Geology of Mesabi iron region, Leith, 2.
- Geology of Minnesota, Hall (C. W.), 5, 7.
- Geology of Mississippi Valley at Little Falls, Winchell (N. H.), 8.
- Geology of Prairie Island, Upham, 21.
- Geology of the iron ores of Minnesota, Winchell (N. H.), 24.
- Glacial features of the St. Croix Dalles region, Chamberlin (R. T.), 1.
- Glacial lakes of Minnesota, Winchell (N. H.), 3.
- Highland range in Minnesota, Elftman, 1.
- Iron-ore deposits of the Lake Superior region, Van Hise, 2.
- Iron ores of Mesabi and Gogebic ranges, Leith, 8.
- Iron ores of Minnesota, Winchell (N. H.), 7.
- Kakabikansing, Brower, 1.

Minnesota—Continued.

- Keewatin and Laurentide ice sheets in Minnesota, Elftman, 2.
- Keewatin area of eastern and central Minnesota, Hall (C. W.), 4.
- Keeweenawan area of eastern Minnesota, Hall (C. W.), 3.
- Lake Superior iron-ore deposits, Grant (U. S.), 6.
- Lake Superior iron region during 1903, Leith, 12.
- Lower Silurian fauna of Minnesota, Sardeson, 9.
- Lower Silurian formations of Wisconsin and Minnesota, Sardeson, 8.
- Magnesian series of the northwestern States, Hall (C. W.), 10.
- Man in the Ice Age at Lansing, Kans., and Little Falls, Minn., Upham, 8.
- Mesabi iron-bearing district, Leith, 4.
- Mesabi iron-ore range, Woodbridge, 1.
- Mesabi iron range, Leith, 2.
- Mesabi iron range, Winchell (H. V.), 3.
- Mining in the Vermilion iron district, Thomas, 3.
- New iron-bearing horizon in Keewatin in Minnesota, Winchell (N. H.), 1.
- Origin and distribution of Minnesota clays, Berkey, 3.
- Original source of Lake Superior iron ores, Spurr, 5.
- Paleozoic fossils in the drift, Sardeson, 6.
- Particular case of glacial erosion, Sardeson, 14.
- Pioneer iron mine, Ely, Minn., Carlyle, 1.
- Report on Lake Superior region, Van Hise and others, 1.
- Results of the late Minnesota geological survey, Winchell (N. H.), 13.
- Sacred Heart geyser spring, Berkey, 2.
- Secondary origin of certain granites, Daly, 11.
- Spherulitic texture in the Archean greenstones of Minnesota, Clements, 6.
- Underground waters of Minnesota, Hall (C. W.), 9.
- Vermilion district of Minnesota, Clements, 2, 3, 5.
- Water resources of Minnesota, Hall (C. W.), 8.

Mississippi.

- Age of Alabama white limestone, Casey, 2.
- Cement and cement resources of the Tombigbee River district, Eckel and Crider, 1.
- Cement materials and industry of the United States, Eckel, 34.
- Clays of the United States, Ries, 6.
- Geology of Oktibbeha County, Logan, 2.
- Historical outline of the geological and agricultural survey of the State of Mississippi, Hilgard, 1.
- Loess of Natchez, Shimek, 4.

Mississippi—Continued.

- New species of Tertiary fossils, Aldrich, 2.
- Oligocene of western Europe and southern United States, Maury, 1.
- Stoneware and brick clays, Eckel, 18.
- Underground waters of Mississippi, Johnson (L. C.), 1.
- Underground waters of Mississippi, Logan and Perkins, 1.
- Water resources of Mississippi, Johnson and Eckel, 1.

Missouri.

- Age of the Kansan drift sheet, Hershey, 4.
- Another glacial wonder, Wright (G. F.), 10.
- Audubon's account of the New Madrid earthquake, Fuller (M. L.), 28.
- Biennial report of State geologist, Buckley, 7.
- Billings meteorite, Ward (H. A.), 10.
- Bituminous and asphalt rocks, Broadhead, 4.
- Bluffs of Missouri River, Owen, 1.
- Calcite from the Joplin mining district, Sterrett, 2.
- Cambrian age of magnesian limestones of Missouri, Keyes, 23.
- Cambrian fossils of St. François County, Beecher, 2.
- Carboniferous formations of the Ozark uplift, Ball, 1.
- Cave regions of the Ozarks and Black Hills, Owen, 4.
- Cement materials and industry of the United States, Eckel, 34.
- Coal fields of Missouri, Bush, 1.
- Comparison of fossil diatoms, Elmore, 1.
- Copper deposits of Missouri, Bain and Ulrich, 1, 2.
- Correlation of the Kinderhook formations, Weller, 1.
- Cyclus from Coal Measures, Rogers, 3.
- Deposition of the loess, Owen, 5.
- Depositional equivalent of hiatus at base of our Coal Measures, Keyes, 18.
- Devonian hiatus in continental interior, Keyes, 28.
- Devonian interval in Missouri, Keyes, 26.
- Disseminated lead ores of southeast Missouri, Nason, 4.
- Distribution and synonymy of Ptychospira sexplicata, Greger, 1.
- Echinodermata of the Missouri Silurian, Rowley, 3.
- Eurypterid remains in the Cambrian, Beecher, 3.
- Evolution of lowlands of southeastern Missouri, Marbut, 1.
- Earthquakes in the New Madrid area, Fuller (M. L.), 41.
- Fayetteville folio, Adams and Ulrich, 1.
- Fossils from Subcarboniferous rocks of northeastern Missouri, Rowley, 2.

Missouri—Continued.
- Fossils from the upper Paleozoic rocks, Rowley, 1.
- Galena-Joplin lead and zinc district, Haworth, 1.
- Geological surveys in Missouri, Broadhead, 1.
- Geological relations and age of St. Joseph and Potosi limestones of Missouri, Nason, 5.
- Geology and mineralogy, Broadhead, 3.
- Geology and physiography of Missouri, Marbut, 4.
- Geology of Jacobs Cavern, Gould, 12.
- Geology of Miller County, Ball and Smith, 1.
- Geology of Missouri, Broadhead, 2.
- Geology of Missouri, Gallaher, 1, 2.
- Geology of Moniteau County, Van Horn, 1.
- Geology of the Hahatonka district, Scherer, 1.
- Gisements de minerals de zinc, Demaret, 1.
- Glacial bowlders along Osage River in Missouri, Buckley, Ball, and Smith, 1.
- Graydon sandstone, Babcock and Minor, 1.
- Hannibal formation in Greene County, Park and Lyman, 2.
- History of geological surveys in Missouri, Broadhead, 1.
- Introduction to geology of Miller County, Buckley, 5.
- Introduction to geology of Moniteau County, Buckley, 8.
- Joplin zinc district, Steele, 1.
- King-Ritter fault, Ruhl, 1.
- Lead and zinc deposits of Mississippi Valley, Keyes, 20.
- Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
- Lead and zinc deposits of Ozark region, Bain, 2.
- Lead and zinc deposits of Ozark region, Van Hise, 5.
- Lead and zinc deposits of the Joplin district, Smith (W. S. T.), 2.
- Limestone conglomerate in the lead region, Nason, 1.
- Loess, Broadhead, 6.
- Mineralogy [of Missouri], Broadhead, 2.
- Minerals of Joplin district, Rogers, 6.
- Missouri and Arkansas zinc mines, Branner, 3.
- Missouri and Arkansas zinc mines, Hedburg, 1.
- Missouri and Arkansas zinc mines, Nichols (H. W.), 2.
- Missouri coal field, Griffith, 4.
- Missouri lead and zinc regions, Crook, 2.
- Missouri paleontology, Rowley, 4.
- Names of coals west of Mississippi River, Keyes, 19.
- Natural mounds, Spillman, 1.

Missouri—Continued.
- New forms of Carboniferous fish remains, Eastman, 9.
- New Madrid earthquake, Broadhead, 3.
- New Madrid earthquake, Shepard, 3.
- Nomenclature of the Cambrian formations of the St. François Mountains, Keyes, 6.
- Observations at Pegmatite Hill, Ruhl, 2.
- Occurrence of greenockite on calcite from Joplin, Cornwall, 1.
- Origin of Joplin ore deposits, Bain, 1.
- Physiography and geology of Ozark region, Adams (G. I.), 3.
- Physiography of Ozark region, Marbut, 3.
- Pierson Creek mines, Smith and Standley, 1.
- Quarrying industry of Missouri, Buckley and Buehler, 1.
- Relations and age of the St. Joseph and Potosi limestones, Nason, 2.
- Report of State geologist, Buckley, 4.
- Rocks and geological horizons of Greene County, Shepard, 6.
- Saccharoidal sandstone, Broadhead, 8.
- Ste. Genevieve meteorite, Ward (H. A.), 1.
- Sandstones of Ozark region, Marbut, 2.
- Small mounds, Bushnell, 1.
- Source of Missouri lead, Wheeler (H. A.), 1.
- Spring system of the Decaturville dome, Shepard, 4.
- Springfield water supply, Park and Lyman, 1.
- Springs of the Ozark region, Fuller (M. L.), 35.
- Structural features of Joplin district, Bain, 17.
- Structural features of the Joplin district, Siebenthal, 4.
- Surface deposits of Missouri and Kansas, Broadhead, 7.
- Table of geological formations, Shepard, 5.
- Underground waters of Missouri, Shepard, 5.
- Water resources of Missouri, Shepard, 2.
- Water resources of the Joplin district, Smith (W. S. T.), 4.
- Western interior coal field, Bain, 3.
- Winoka gravels, Hays, 1.
- Winoka gravels, Park (E. J.), 1.
- Zinc deposits of Missouri, Bain, 13.

Montana.
- Aladdin folio, Darton and O'Harra, 1.
- Alps of Montana, Matthes, 2.
- Barite and selenite crystals, Rowe, 3.
- Bowlders due to rock decay, Upham, 24.
- Cement resources of Montana, Weed, 33.
- Chalcocite at Butte, Winchell (H. V.), 2.

Montana—Continued.
Conditions in veins and faults in Butte. Braden, 1.
Corundum in Montana. Edman, 1.
Cretaceous and Lower Tertiary section in south central Montana. Douglass, 3.
Current notes on physiography. Davis (W. M.), 42.
Dinosaurs in Fort Pierre shales. Douglass, 5.
Discovery of Torrejon mammals in Montana. Douglass, 6.
Economic value of hot springs. Weed, 38.
Fauna of Titanotherium beds. Matthew (W. D.), 9.
Fossil plants from vicinity of Porcupine Butte. Knowlton, 12.
Fossil plants of the Judith River beds. Knowlton, 18.
Fossil Mammalia of White River beds. Douglass, 4.
Fracture valley system. Iddings, 2.
Fresh-water faunule from Cretaceous of Montana. Stanton, 4.
Geological observations along northern boundary of Montana. Finlay (G. I.), 6.
Geological reconnaissance across the Bitter Root Range and Clearwater Mountains. Lindgren, 21.
Geology and ore deposits of Elkhorn mining district. Weed, 5.
Geology and paleontology of the Judith River beds. Stanton and Hatcher, 1.
Geology of Butte mining district. Miller (G. W.), 2.
Geology of Hellgate Valley. Winchell (N. H.), 26.
Geology of southwestern Montana. Douglass, 10.
Geology of the Hellgate and Big Blackfoot valleys. Winchell (N. H.), 25.
Glacial drift in the Dakotas, Montana, Idaho, and Washington. Upham, 27.
Glacial exploration in the Montana Rockies. Chaney, 1.
Gold mines of Marysville district. Weed, 14.
Gold nugget from Montana. Pearce, 1.
Gold production of North America. Lindgren, 16.
Great fault of the Bitter Root Mountains. Lindgren, 30.
Great Flat at Butte. Weed, 32.
Gypsum deposits. Rowe, 5.
Gypsum deposits in Montana. Weed, 25.
Igneous rocks and their segregation. Winchell (A. N.), 4.
Igneous rocks of Algonkian series. Finlay (G. I.), 4.
Igneous rocks of Highwood Mountains. Pirsson, 4.
Influence of country rock on mineral veins. Weed, 6.

Montana—Continued.
Lewis Range of Montana and its glaciers. Matthes, 4.
Lower Cretaceous plants from Montana. Fontaine, 4.
Meteoreisen-Studien. Cohen, 4.
Microscopical petrography of Elkhorn mining district. Barrell, 1.
Mineral deposits of Bitter Root Range and Clearwater Mountains. Lindgren, 11.
Missourite, a new leucite rock. Weed and Pirsson, 2.
Montana coal fields. Rowe, 2, 6.
Neocene lake beds of Montana. Douglass, 1.
New species of Merycochœrus. Douglass, 2.
New turtles from Judith River beds of Montana. Hay, 15.
Note on certain copper minerals. Winchell (A. N.), 2.
Oil of the northern Rocky Mountains. Willis, 4.
Ore deposits at Butte. Weed, 16.
Ores of Butte mining district. Byrne, 3.
Origin of North Dakota lignites. Wilder, 5.
Our northern Rockies. Chapman, 1.
Overthrust in northern Rockies. Willis, 9.
Petrographic province of central Montana. Pirsson, 5.
Petrography of Square Butte. Pirsson, 3.
Petrography of Yogo Peak. Pirsson, 1.
Physiography of Flathead Lake region. Elrod (M. J.), 1.
Physiography of northern Rocky Mountains. Willis, 8.
Rocky Mountain coal fields. Storrs (L. S.), 1.
Shonkin Sag and Palisade Butte laccoliths in the Highwood Mountains. Weed and Pirsson, 1.
Source of placer gold in Alder Gulch. Douglass, 11.
Stratigraphic position of Judith River beds. Hatcher and Stanton, 1.
Stratigraphy and structure of Lewis and Livingston ranges. Willis, 6.
Structure of front range, northern Rocky Mountains. Willis, 7.
Synthesis of chalcocite and its genesis at Butte. Winchell (H. V.), 2.
Tertiary of Montana. Douglass, 9.
Vertebrates from the Montana Tertiary. Douglass, 8.
Volcanic ash beds of Montana. Rowe, 1.

Nebraska.
Barites of Nebraska and Bad Lands. Barbour (E. H.), 1.
Benton and Niobrara formations of Nebraska. Condra, 5.
Camp Clarke folio. Darton, 10.
Carboniferous fishes from central western States. Eastman, 10.

Nebraska—Continued.
Cement materials and industry of the United States, Eckel, 34.
Chalcedony-lime nuts from Bad Lands, Barbour (E. H.), 2.
Coal Measure Bryozoa of Nebraska, Condra, 2.
Comparison of fossil diatoms, Elmore, 1.
Concretions of the Pierre shale, Barbour (C. A.), 2.
Dakota and Carboniferous clays of Nebraska, Gould and Fisher, 1.
Dakota Cretaceous of Kansas and Nebarska, Gould, 5.
Discevery of meteoric iron in Nebraska, Barbour (E. H.), 3.
Discovery of the Laramie in Nebraska, Fisher (C. A.), 3.
Fauna of the Permian, Beede, 2.
Geological bibliography of Nebraska, Barbour and Fisher, 1.
Geology and underground water resources of the central Great Plains, Darton, 18.
Geology and water resources of Patrick and Goshen Hole quadrangles, Adams (G. I.), 4.
Geology of Dakota County, Burchard, 2.
Gigantic mammal from Loup Fork beds, Peterson, 4.
Ground sloth from Nebraska Pleistocene, Brown (B.), 1.
Jefferson County, Carmony, 1.
Lignites of the Missouri Valley, Burchard, 1.
Limestone quarries of Nebraska, Fisher (C. A.), 2.
Meteorites of Nebraska, Barbour (E. H.), 4.
Missourian and Permo-Carboniferous fish fauna of Kansas and Nebraska, Eastman and Barbour, 1.
New Bryozoa from Coal Measures of Nebraska, Condra, 1.
New Miocene artiodactyl, Barbour (E. H.), 11.
Old Platte channel, Condra, 4.
Osteology of Oxydactylus, Peterson, 1.
Pleistocene fauna from Hay Springs, Matthew (W. D.), 8.
Report of State Geological Survey, Barbour (E. H.), 5.
Report of State geologist, Barbour (E. H.), 8.
Rhombopora lepidodendroides Meek, Condra, 3.
Scotts Bluff folio, Darton, 11.
Value of bluff and valley wash deposits as brick material, Fisher (C. A.), 1.
Volcanic ash in Nebraska soils, Barbour (E. H.), 7.

Nevada.
Alum deposit near Silver Peak, Spurr, 21.

Nevada—Continued.
Alunite-jarosite group of minerals, Hillebrand and Penfield, 1.
Basin range structure of the Humboldt region, Louderback, 4.
Building stones of Nevada, Reid (J. A.), 2.
Cement materials and industry of the United States, Eckel, 34.
Coal deposits between Silver Peak and Candelaria, Spurr, 20.
Contact quaquaversal, Purington, 2.
Delamar and Horn-Silver mines, Emmons (S. F.), 3.
Developments at Tonopah during 1904, Spurr, 26.
District of Goldfield, Draper, 1.
Faulting at Tonopah, Spurr, 24.
Genetic relations of western Nevada ores, Spurr, 31.
Geological features of Nevada, Louderback, 1.
Geological reconnoissance of region of upper main Walker River, Smith (D. T.), 1.
Geology of Goldfield, Dominian, 1, 2.
Geology of Goldfields district, Spurr, 19.
Geology of Nevada, Spurr, 6.
Geology of Nevada south of fortieth parallel, Spurr, 28.
Geology of region of Walker River, Smith (D. T.), 2.
Geology of the Great Basin, Turner, 1.
Geology of the Tonopah mining district, Spurr, 29.
Gold-bearing quartzites of eastern Nevada, Weeks, 2.
Gold production of North America, Lindgren, 16.
Gold production of North America, Turner, 15.
Gypsum deposits of Nevada, Louderback, 2, 5.
Historical geology of Esmeralda County, Turner, 5.
Hydro-thermal activity in veins at Wedekind, Morris, 1.
Ichthyosaurian limb from Triassic of Nevada, Merriam (J. C.), 14.
Lone Mountain district, Lakes, 72.
Marine Trias of western America, Smith (J. P.), 5.
Metallic sulphides from Steamboat Springs, Lindgren, 19.
Minerals from Pacific States, Turner, 4.
Mines of Esmeralda County, Turner, 3.
Montezuma district, Stretch, 3.
Nevada coal field, Stoneham, 1.
Nevada ore deposit, Wiel, 1.
New fossil cyprinoid, Leuciscus turneri, Lucas (F. A.), 4.
Nitrate deposits, Humboldt County, Wagenen, 1.
Notes on Goldfield, Winchell (H. V.), 5.
Notes on Tonopah, Easton, 1.

Nevada—Continued.
- Notes on two desert mines, Emmons (S. F.), 2.
- Occurrence of tungsten ore, Weeks, 1.
- Ore deposits of Contact, Bailey (J. T.), 1.
- Ore deposits at Silver Peak quadrangle, Spurr, 18.
- Ore deposits of Tonopah, Spurr, 8, 9, 11.
- Ores of Goldfield, Spurr, 25.
- Osceola tungsten deposits, Smith (F. B.), 1.
- Pyramid Lake, Fairbanks, 2.
- Rabbit Hole sulphur mines, Adams (G. I.), 16.
- Santa Fe mining district, McCormick, 1.
- Silver Peak region, Spurr, 22.
- Southern Nevada and Inyo County, Taft, 1.
- Stibnite at Steamboat Springs, Lindgren, 24.
- Stratigraphy of Uinta Mountains, Berkey, 8.
- Structural section of a Basin range, Louderback, 3.
- Structure and genesis of the Comstock lode, Reid (J. A.), 3.
- Tätigkeit heisser Quellen in den Gangen von Wedekind, Wendeborn, 1.
- Tonopah, Knapp (S. A.), 1.
- Tonopah mining camp, Lakes, 68.
- Tonopah mining district, Spurr, 27.
- Triassic Ichthyopterygia from California and Nevada, Merriam (J. C.), 4.
- Triassic ichthyosaurs from California and Nevada, Osborn, 15.
- Tungsten ore in eastern Nevada, Weeks, 8.
- Typical Nevada mining region, Lakes, 69.
- Variations of texture in Tertiary igneous rocks of the Great Basin, Spurr, 2.
- Water storage in Truckee Basin, Taylor (L. H.), 1.

Newfoundland.
- Exploration in the Carboniferous basin near Grand Lake, Howley, 2.
- Geological exploration in district of White Bay, Howley, 1.
- Preliminary notice of Etcheminian fauna, Matthew (G. F.), 1.
- Pyrites deposits at Port au Port, Meissner, 1.
- Variolitic pillow-lava, Daly, 9.

New Hampshire.
- Albany granite and its contact phenomena, Hawes, 2.
- Ammonoosuc district of New Hampshire, Hitchcock (C. H.), 6.
- Composition of labradorite rocks, Dana, 1.
- Description of Dalmanites lunatus, Lambert, 1.
- Eruptive rocks in Campton, Hawes, 1.

New Hampshire—Continued.
- Geology of Littleton, Hitchcock (C. H.), 10.
- Geology of Monadnock Mountain, Perry, 2.
- Geology of Mount Kearsarge, Perry, 1.
- Geology of the Belknap Mountains, Pirsson and Washington, 1.
- Glacial topography in central New Hampshire, Emerson (P.), 1.
- Moraines and eskers in the White Mountains, Upham, 23.
- Rocks of Lake Winnepesaukee, Washington, 3.
- Trilobite (Dalmanites lunatus) from Littleton, Lambert, 2.
- Underground waters of New Hampshire, Fuller (M. L.), 22.
- Water resources of New Hampshire, Boutwell, 7.
- Water resources of the Portsmouth-York region, Smith (G. O.), 18.

New Jersey.
- Acidaspis from a bowlder of Marcellus shale, Hitchcock (C. H.), 4.
- Administrative report, New Jersey geological survey, Smock, 1.
- Administrative report of State geologist, Kümmel, 4.
- Administrative report of State geologist, Kümmel, 7.
- Artesian wells, Woolman, 1–3.
- Atlantic Highlands section, Prather, 4.
- Cement materials and industry of the United States, Eckel, 34.
- Cement-rock deposits of the Lehigh district, Eckel, 25.
- Classification of Upper Cretaceous formations of New Jersey, Weller, 12.
- Clay and its properties, Ries, 12.
- Clays of the United States, Ries, 6.
- Cliffwood clays and the Matawan, Knapp (G. N.), 2.
- Columbia University geological department, Shimer, 4.
- Contributions to mineralogy, Eyerman, 1.
- Copper deposits of Appalachian States, Weed, 17.
- Copper deposits of New Jersey, Weed, 18.
- Copper leaching at the American copper mine, Bond, 1.
- Crania of Trenton, Hrdlička, 1.
- Cretaceous near Cliffwood, Berry, 8.
- Cretaceous formations and faunas of New Jersey, Weller, 7.
- Cretaceous turtles of New Jersey, Wieland, 6, 7.
- Cretaceous turtles of New Jersey: Agomphus, Wieland, 13.
- Crustacea of the Cretaceous, Pilsbry, 1.
- Crystallography of calcites of New Jersey trap region, Rogers, 5.
- Fasciolaria from the Eocene green marls at Shark River, N. J., Whitfield, 13.

New Jersey—Continued.
Fauna of Cliffwood clays, Weller, 10, 13.
Flora of the Matawan formation, Berry, 5.
Fossil flora from Cliffwood, Berry, 9.
Gisements de minerais de zinc, Demaret, 1.
Glacial geology of New Jersey, Salisbury and others, 1.
Glauconite, Prather, 3.
Griggstown copper deposit, Weed, 27.
Iron and zinc mines, Kümmel, 5.
Leucite-tinguaite from Beemerville, Wolff, 1.
Magnetite deposits in Sussex County, Spencer (A. C.), 11.
Manufacture of clay products, Ries, 13.
Matawan formation, Clark (W. B.), 5.
Mineralogical notes, Chester, 1.
Mining industry, Kümmel, 2, 3.
Molding sands of New Jersey, Kümmel, 9.
New minerals from Franklin, Penfield and Warren, 1.
New York City folio, Merrill and others, 1.
Occurrence of thaumasite, Penfield and Pratt, 1.
Old swamp bottom, Berry, 12.
On clinohedrite, Penfield and Foote, 2.
On gahnite, Brush, 3.
On sussexite, Brush, 2.
Paleozoic faunas, Weller, 6.
Paleozoic limestones of Kittatinny Valley, Kümmel and Weller, 1.
Paleozoic rocks of northwestern New Jersey, Van Ingen, 3.
Plants from the Matawan formation, Berry, 4.
Pleistocene mollusks of White Pond, Baker, 1.
Portland-cement industry, Kümmel, 1.
Pre-Cambrian rocks of New Jersey, Spencer (A. C.), 15.
Pre-Cambrian rocks of the Franklin Furnace quadrangle, Spencer (A. C.), 13.
Preliminary report on the Paleozoic formations, Weller, 3.
Report of State geologist, Kümmel, 8.
Rocks of Green Pond Mountain region, Kümmel and Weller, 2.
Serpentines of Manhattan Island, Newland, 1.
Stratigraphy of New Jersey clays, Kümmel and Knapp, 1.
Summary and index of reports of New Jersey geological survey, Kümmel, 6.
Surface formations in southern New Jersey, Salisbury, 1.
Talc deposits of Phillipsburg, Peck, 6.
Triassic fishes of New Jersey, Eastman, 20.
Underground waters of New Jersey, Knapp (G. N.), 1, 3.

New Jersey—Continued.
Water resources of New Jersey, La Forge, 1.
Well records, Kümmel, 10.
Wells at White Oak Ridge, Vermeule, 1.
Zinc and manganese deposits of Franklin Furnace, Wolff, 2.

New Mexico.
Age of lavas of plateau region, Reagan, 2.
Alunite-jarosite group of minerals, Hillebrand and Penfield, 1.
Analcite-bearing camptonite from New Mexico, Ogilvie, 2.
Applications of geology to economic problems in New Mexico, Herrick (C. L.), 1.
Basin features of southwestern United States, Keyes, 40.
Bisection of mountain blocks, Keyes, 52.
Block mountains in New Mexico, Johnson (D. W.), 7.
Block mountains in New Mexico, Keyes, 37.
Bolson plains, Keyes, 38.
Bolson plains, Tight, 6.
Burro Mountain copper district, Reid (G. D.), 1.
Canyons of northeastern New Mexico, Lee (W. T.), 6.
Cerillos anthracite mine, Lakes, 5.
Clinoplains of the Rio Grande, Herrick (C. L.), 5.
Coal fields of White Mountain region, Fisher (C. A.), 4.
Coal, graphite, and oil field of Raton, Lakes, 23.
Coal Measure forest near Socorro, Herrick (C. L.), 3.
Copper deposits of Sierra Oscura, Turner, 11.
Curtis mines, Lakes, 7.
Earthquakes in New Mexico, Bagg, 4.
Ephemeral lakes in arid regions, Keyes, 30.
Extinct glaciers, Stone (G. H.), 2.
Fossil form of Orohelix yavapai Pilsbry, Cockerell, 2.
Fundamental complex beyond southern end of Rocky Mountains, Keyes, 46.
Geological reconnaissance in eastern Valencia County, Johnson (D. W.), 2.
Geological structure of Jornada del Muerto, Keyes, 53.
Geological structure of New Mexican bolson plains, Keyes, 29.
Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
Geology of Apache Canyon placers, Keyes, 33.
Geology of the Cerrillos Hills, Johnson (D. W.), 4–6.
Geology of the Jemez-Albuquerque region, Reagan, 1.
Geology of the saline basins of central New Mexico, Johnson (D. W.), 1.

New Mexico—Continued.
- Gisements de minerals de zinc, Demaret, 1.
- Gold production of North America, Lindgren, 16.
- Gypsum deposits in New Mexico, Herrick (H. N.), 1.
- Hagan coal field, Keyes, 43.
- High altitude conoplain, Oglivie, 5.
- Iron deposits of Chupadera Mesa, Keyes, 42.
- Jemez coal fields, Reagan, 4.
- Jurassic horizon around the southern end of the Rocky Mountains, Keyes, 51.
- Lake Otero, Herrick (C. L.), 6.
- Lake Valley limestone, Keyes, 54.
- Landslide in Chaco Cañon, Dodge, 2.
- Laws of formation of New Mexico mountain ranges, Herrick (C. L.), 4.
- Minerals associated with copper, Stone (G. H.), 1.
- Mogollon range, Weatherby, 1.
- Morrison shales of southern Colorado and northern New Mexico, Lee (W. T.), 3.
- New coal field, Lakes, 6.
- New fossil Ashmunella, Cockerell, 1.
- New Mexico copper deposits, Austin, 2.
- New Mexico mines and minerals, Jones (F. A.), 1.
- Occurrence of aurichalcite, Keyes, 39.
- Ore deposits of San Pedro district, Yung and McCaffery, 1.
- Ore deposits of the Sierra de Los Caballos, Keyes, 47.
- Oscuro Mountain meteorite, Hills, 3.
- Physiography of southern Arizona and New Mexico, Fairbanks, 5.
- Remarkable silver pipe, Keyes, 32.
- Report of mine inspector, Sheridan, 1.
- Rocky Mountain coal fields, Storrs (L. S.), 1.
- Secondary enrichment in the Santa Rita district, Bagg, 5.
- Snails of the genus Physa found at Las Vegas, Springer (A.), 1.
- Structures of Basin ranges, Keyes, 45.
- Topography and geology of New Mexico, Jewett, 1.
- Triassic system in New Mexico, Keyes, 50.
- Trionychid, Conchochelys admirabilis, from the Puerco beds, Hay, 25.
- Trip to White Oaks, Smith and Dominian, 1.
- Unconformity of the Cretaceous on older rocks in central New Mexico, Keyes, 44.
- White sands of New Mexico, Brady, 1.
- Zinc carbonate ores of the Magdalena Mountains, Keyes, 48.

New York.
- Abrasives of New York State, Magnus, 1.
- Adirondack augite-andesite, Cushing, 1.

New York—Continued.
- Alnoite dikes in East Canada Creek, Schneider, 10.
- American Association for Advancement of Science, summer meeting, Hovey, 46.
- Ancient gorge of Hudson River, Wright (G. F.), 15.
- Ancient water levels of Champlain and Hudson valleys, Woodworth, 10.
- Apatite crystals, Antwerp, New York, Knight (N.), 4.
- Artesian conditions on Long Island, Veatch, 6.
- Artesian flows from unconfined sandy strata, Fuller (M. L.), 39.
- Artesian water supply at Ithaca, Whitney, 1.
- Artesian well sections at Ithaca, Tarr, 5.
- Beach structure in Medina sandstone, Fairchild, 1.
- Bedford cyrtolite, Luquer, 2.
- Bones of a mastodon found, Gordon (R.), 1.
- Calciferous formation of Mohawk Valley, Cleland, 3.
- Cambric Dictyonema fauna, Ruedemann, 7.
- Cambro-Ordovician outlier at Wellstown, Julien, 4.
- Cambro-Ordovician outlier at Wellstown, Kemp, 2, 13.
- Celestite near Syracuse, Kraus, 2.
- Cement industry in New York, Eckel, 5.
- Cement materials and industry of the United States, Eckel, 34.
- Classification of New York geologic formations, Clarke (J. M.), 20.
- Classification of rocks of Watkins Glen quadrangle, Williams (H. S.), 7.
- Clays of the United States, Ries, 6.
- Clinton hematite, Eckel, 33.
- Cobleskill limestone of New York, Hartnagel, 1.
- Concretions in the Chemung of New York, Kindle, 5.
- Configuration of rock floor of Greater New York, Hobbs, 27.
- Contact lines of Upper Siluric formations on the Brockport and Medina quadrangles, Clarke, Ruedemann, and Luther, 1.
- Contributions from the mineralogic laboratory, Whitlock, 4.
- Cretaceous beds of Long Island, Hollick, 7.
- Crinoid and mollusk from the Portage rocks of New York, Whitfield, 11.
- Crown Point section, Raymond (P. E.), 1.
- Description of State geologic map, Merrill (F. J. H.), 2.
- Devonic and Carbonic formations of southwestern New York, Glenn, 1.
- Devonic worms, Clarke (J. M.), 18.

New York—Continued.

Discovery of a mastodon's tooth and the remains of a boreal vegetation on Staten Island, Hollick, 2.
Discovery of amber on Staten Island, Hollick, 16.
Distribution of Hudson schist in Oyster Bay quadrangle, Merrill and Magnus, 1.
Drainage features of central New York, Tarr, 11.
Drainage features of southern central New York, Tarr, 14.
Drift fossils, Hollick, 8.
Dumortierite, Schaller, 7.
Dwarf fauna of Tully limestone, Loomis, 4.
Economic geology of Monroe County, Sarle, 3.
Economic geology of New York, New York State Museum, 1.
Economic geology of Oneida County, Smyth (C. H.), 5.
Economic geology of western New York, Bishop (I. P.), 2.
Economic products of St. Lawrence County, Logan, 1.
Emery deposits of Westchester County, Eckel, 2.
Emery mines of Westchester County, Nevius, 2.
Eruptive dikes in Syracuse, Schneider, 4.
Eruptive dikes near Ithaca, Schneider, 7.
Esker in western New York, Comstock (F. M.), 1.
Eurypterid fauna from the Salina, Sarle, 2.
Examples of joint-controlled drainage, Hobbs, 26.
Exposure of serpentine at Syracuse, Kraus, 1.
Fauna of Agoniatite limestone of Onondaga County, Wilson (J. D.), 1.
Fauna of Stafford limestone, Talbot, 1.
Fauna of the Chazy limestone, Raymond (P. E.), 7.
Fauna of the Chazy limestone on Valcour Island, Hudson, 1.
Faunas of the Ordovician at Glens Falls, White (T. G.), 1.
Faunas of the Trenton, Raymond (P. E.), 2.
Field work in town of Minerva, Finlay (G. I.), 2.
Finger lake region of western New York, Dryer, 4.
Folds on the border of the Appalachian system, Kindle, 4.
Fossil alga from Chemung of New York, White (D.), 6.
Fossil faunas of Olean quadrangle, Butts, 1.
Fossil plant remains at Kreisherville, Hollick, 14.

New York—Continued.

Fort Cassin beds in the Calciferous limestone, Dwight, 1.
Gaines folio, Fuller and Alden, 1.
Genesis of amphibole schists and serpentines of Manhattan Island, Julien, 7.
Geographic development of northern Pennsylvania and southern New York, Campbell (M. R.), 9.
Geologic map of the Tully quadrangle, Clarke and Luther, 3.
Geologic notes on the neighborhood of Buffalo, Martin (D. S.), 2.
Geological history of hematite iron ores of Antwerp and Fowler belt in New York, Crosby, 3.
Geological notes, Hollick, 13.
Geological notes on the neighborhood of Buffalo, Martin (D. S.), 3.
Geology and paleontology of Niagara Falls, Grabau, 1.
Geology of Adirondack region, Cushing, 10.
Geology of eastern New York, Prosser, 11.
Geology of crystalline rocks, Smyth (C. H.), 1.
Geology of Fishers Island, Fuller (M. L.), 29.
Geology of Long Island, Veatch, 5.
Geology of Onondaga County, Schneider, 1.
Geology of Paradox Lake quadrangle, Ogilvie, 6.
Geology of Rand Hill, Cushing, 2.
Geology of river channels about Manhattan Island, Hobbs, 18.
Geology of the city of New York, Gratacap, 7.
Geology of the Syracuse region, Hopkins (T. C.), 13.
Geology of the Hudson Valley, Dale, 5.
Geology of the serpentines of central New York, Schneider, 6.
Geology of the vicinity of Little Falls, Cushing, 9.
Geology of Watkins and Elmira quadrangles, Clarke and Luther, 2.
Glacial and post-Glacial history of the Hudson and Champlain valleys, Peet, 1.
Glacial conditions on Long Island, Buffet, 1.
Glacial erosion in the Finger Lake region, Campbell (M. R.), 19.
Glacial features of Syracuse, Fairchild, 13.
Glacial lakes and marine submergence in the Hudson-Champlain Valley, Upham, 32.
Glacial period on Long Island, Veatch, 4.
Glacial phenomena in Adirondacks and Champlain Valley, Ogilvie, 1.
Glacial waters from Oneida to Little Falls, Fairchild, 8.

New York—Continued.

Glaciation of the Green Mountains, Hitchcock (C. H.), 7.
Gorges and waterfalls of New York, Reid (H. F.), 15.
Gorges and waterfalls of New York, Spencer (J. W.), 17.
Gorges and waterfalls of central New York, Tarr, 12.
Gorges and waterfalls of New York, Tarr, 13.
Graphite in the Adirondacks, Kemp, 27.
Graptolite (Levis) facies of Beekmantown formation in Rensselaer County, Ruedemann, 3.
Graptolites of New York, Ruedemann, 8.
Growth and development of Goniograptus thureaui McCoy, Ruedemann, 4.
Guelph fauna of New York, Clarke and Ruedemann, 1.
Guide to mineralogic collections of New York State Museum, Whitlock, 1.
Gypsum deposits in New York, Eckel, 22.
Gypsum deposits of New York State, Parsons, 2.
Gypsum industry in New York State, Parsons, 1, 4.
Hamilton formation in central New York, Cleland, 2.
Hamilton fossils from Bethany, Munroe, 1.
Hanging valleys in the Finger Lake region, Tarr, 6.
Helderberg invasion of the Manlius, Harris, 7.
Hematite deposits of New York, Eckel, 30.
Hematite iron ores of Antwerp and Fowler belt, Crosby, 2.
Horseheads outlet of Glacial lakes of central New York, Fuller (M. L.), 7.
Hudson River beds near Albany, Ruedemann, 1.
Hydrology of New York, Rafter, 1.
Ice erosion theory a fallacy, Fairchild, 11.
Index to publications of New York State Natural History Survey, Ellis (M.), 1.
Indigene and alien faunas of New York Devonic, Clarke (J. M.), 10.
Instances of moderate glacial erosion, Tarr, 9.
Inter-Glacial gorge problem, Matson, 1.
Interpretations of physiography of New York State, Brigham, 3.
Iroquois beach in Ontario, Coleman, 16, 17.
Ithaca fauna of central New York, Clarke (J. M.), 27.
Lime and cement industries of New York, Ries, 4.
Limestones in central New York, Schneider, 2.

New York—Continued.

Limestones interbedded with shales of Marcellus stage, Clarke (J. M.), 2.
Limonite beds at Cornwall, Hartnagel, 3.
Limonite deposits of New York and New England, Eckel, 66.
List of mammals of New York, Miller (G. S.), 1.
Lower Silurian system of eastern Montgomery County, Cumings, 6.
Magnetite deposits at Mineville, Ries, 8.
Manlius formation of New York, Schuchert, 4.
Map of Canandaigua and Naples quadrangles, Clarke and Luther, 1.
Marcellus fault, Schneider, 3.
Marcellus limestone, Wood (Elvira), 1.
Mastodons of New York, Clarke (J. M.), 15.
Mineral developments around Ithaca, Ries, 10.
Mineral developments at Mineville, Ries, 11.
Mineral occurrences in the Salina epoch, Kraus, 3.
Mineral resources of Onondaga County, Hopkins (T. C.), 9.
Minerals not commercially important, Whitlock, 3.
Mining and quarry industry during 1904, Newland, 2.
Minnewaska region, James, 1.
Moraines of Seneca and Cayuga Lake valleys, Tarr, 10.
Moraines of Seneca and Cayuga lakes, Tarr, 7.
Naples fauna in western New York, Clarke (J. M.), 19.
Nematophyton in New York State Museum, Prosser, 8.
New Agelacrinites, Clarke (J. M.), 3.
New dike at Ithaca, Barnett, 1.
New genus of Paleozoic brachipods, Eunoa, Clarke (J. M.), 8.
New problems in glaciology, Fairchild, 14.
New term for Upper Cambrian series, Walcott, 8.
New York City folio, Merrill and others, 1.
New York mineral localities, Whitlock, 2.
Northumberland volcanic plug, Woodworth, 7.
Notes on Paleozoic crustaceans, Clarke (J. M.), 12.
Occurrence of amber at Kreichersville, Hollick, 20.
Oil and gas in New York, Bishop (I. P.), 1.
Olean rock section, Clarke (J. M.), 16.
On hortonolite, Brush, 1.
Ontario coast, Martin (J. O.), 1.
Origin of channels surrounding Manhattan Island, Hobbs, 24.

New York—Continued.
  Origin of faunas of Marcellus limestones of New York, Clarke (J. M.), 13.
  Origin of faunas of Marcellus shales of New York, Clarke (J. M.), 21.
  Oriskany fauna and Becraft Mountain, Clarke (J. M.), 1.
  Oriskany sandstone, Wheelock, 1.
  Overthrust faults in central New York, Wheelock, 2.
  Overthrust faults in New York, Schneider, 9.
  Paleobotany of the Cretaceous of Long Island, Hollick, 11.
  Paleontologic results of areal survey of Olean quadrangle, Clarke (J. M.), 7.
  Paleozoic coral reefs, Grabau, 10.
  Peat, Parsons, 3.
  Peat and its occurrence in New York, Ries, 7.
  Peridotite dikes near Ithaca, Matson, 2.
  Petrography and age of the Northumberland rock, Cushing, 7.
  Petrography of dikes in Syracuse, Smyth (C. H.), 2.
  Petroleum and natural gas, Orton, 1.
  Physical characters and history of some New York formations, Grabau, 17.
  Physical geography of New York State, Tarr, 2.
  Physiographic belts in western New York, Gilbert, 10.
  Physiography of Lake George, Kemp, 4, 7.
  Physiography of the Adirondacks, Kemp, 37.
  Pleistocene features in the Syracuse region, Fairchild, 12.
  Pleistocene geology of Moers quadrangle, Woodworth, 9.
  Pleistocene geology of Nassau County, Woodworth, 2.
  Pleistocene geology of western New York, Fairchild, 2.
  Pleistocene history of Fishers Island, Fuller (M. L.), 40.
  Portland-cement industry in New York, Eckel, 4.
  Portland-cement resources of New York, Eckel, 39.
  Post-Pliocene fossils of the Niagara River gravels, Letson, 1.
  Potsdam sandstone of Lake Champlain basin, Van Ingen, 4.
  Pre-Cambrian formations, Kemp and Hill, 1.
  Pre-Cambrian Highlands, Merrill (F. J. H.), 6.
  Pre-Cambrian outlier at Little Falls, Herkimer County, Cushing, 4.
  Pre-Glacial course of middle portion of Genesee River, Whitbeck, 1.
  Pre-Glacial stream flow in central New York, Carney, 2.

New York—Continued.
  Pre-Iroquois channels between Syracuse and Rome, Fairchild, 4.
  Pre-Kansan and Iowan deposits of Long Island, Fuller (M. L.), 6.
  Preservation of plants by geologic processes, Hollick, 18.
  Problem of Niagara, Grabau, 7.
  Pyrite deposits of the western Adirondacks, Eckel, 40.
  Quarries of bluestone, Dickinson, 1.
  Quarry industry in southeastern New York, Eckel, 6.
  Rate of lateral erosion at Niagara, Wright (G. F.), 3.
  Recent geologic work in Franklin and St. Lawrence counties, Cushing, 3.
  Recently discovered facts in regard to Silver Lake, Hollick, 12.
  Reef structures in the Clinton and Niagara strata, Sarle, 1.
  Replacement of quartz by pyrite and corrosion of quartz pebbles, Smyth, 6.
  Report of director of State Museum, Merrill (F. J. H.), 3–5.
  Report of the director, Clarke (J. M.), 28.
  Report of State paleontologist, Clarke (J. M.), 5, 11, 14, 25.
  Results of resurvey of Long Island, Fuller and Veatch, 1.
  Revision of New York Helderbergian crinoids, Talbot, 2.
  River terraces and reversed drainage, Mills (F. S.), 1.
  Rock floor of the vicinity of New York, Hobbs, 21.
  Rocks of Roundout, Van Ingen and Clark, 1.
  Rossie lead veins, Smyth (C. H.), 4.
  Salt and other resources of the Watkins Glen quadrangle, Kindle, 7.
  Sedentary impression known as Climactichnites, Woodworth, 6.
  Serpentines of Manhattan Island, Newland, 1.
  Shifting of faunas, Williams (H. S.), 4.
  Siluric and Devonic faunas of Trilobite Mountain, Shimer, 5.
  Siluric or Ontaric section of eastern New York, Hartnagel, 2.
  Slate quarries of Washington County, Nevius, 1.
  South Onondaga geology, Schneider, 8.
  Story of Niagara, Hitchcock (C. H.), 2.
  Stratigraphic value of Portage sandstones, Luther, 1.
  Stratigraphy of Becraft Mountain, Grabau, 9.
  Stratigraphy of Mohawk Valley, Prosser, 5.
  Stratigraphy of Portage formation, Luther, 2.
  Structural details in Green Mountain region, Dale, 1.

New York—Continued.
Structure of some primitive cephalopods, Ruedemann, 9.
Syllabus for field and laboratory work in geology, Tarr, 1.
Tectonic geography of southwestern New England and southeastern New York, Hobbs, 23.
Tourmaline contact zones near Alexandria Bay, Smyth (C. H.), 3.
Tree trunks found with mastodon remains, Gordon (R.), 2.
Trenton conglomerate of Rysedorph Hill, Ruedemann, 2.
Trilobites of Chazy limestone, Raymond (P. E.), 5.
Tropidoleptus fauna at Canandaigua Lake, Raymond (P. E.) 4.
Type case in diversion of drainage, Carney, 1.
Type specimens of Paleozoic fossils in York State Museum, Clarke and Ruedemann, 2.
Underground waters of New York, Weeks, 12.
Undulations of the Lockport limestone, Gilbert, 23.
Water resources of Fort Ticonderoga quadrangle, Dale, 7.
Water resources of New York, Weeks, 11.
Water resources of Taconic quadrangle, Taylor (F. B.), 5.
Water resources of the Catatonk area, Kindle, 8.
Water resources of Watkins Glen quadrangle, Tarr, 8.
Waters of a gravel-filled valley near Tully, Hollister, 3.
Whetstone industry, Schneider, 5.
Worm burrows in Chemung of New York, Whitfield, 10.

Nicaragua.
Additions to the list of Nicaragua volcanic eruptions in historic time, Crawford, 4.
Earthquakes in Nicaragua, Crawford, 1.
Gold fields of eastern Nicaragua, Gottschalk, 1.
List of most important volcanic eruptions and earthquakes in western Nicaragua within historic time, Crawford, 3.
Recent decline in the level of Lake Nicaragua, Shimek, 1.
Volcanoes and earthquakes in Nicaragua, Crawford, 2.
Vulkanausbruch in Mittelamerika, Sapper, 23.
Vulkanische Ereignisse in Mittelamerika, Sapper, 20, 21.

Nomenclature.
Amphion, Harpina, and Platymetopus, Raymond (P. E.), 6.
Base level, grade, and peneplain, Davis (W. M.), 26.

Nomenclature—Continued.
Catalogue of type specimens of fossil invertebrates in National Museum, Schuchert and others, 1.
Classification of New York geologic formations, Clarke (J. M.), 20.
Cobleskill limestone of New York, Hartnagel, 1.
Copper deposits of Missouri, Bain and Ulrich, 2.
Dates of publication of certain genera of fossil vertebrates, Bush (L. P.), 1.
Delaware limestone, Prosser, 13.
Eparchæan interval, Lawson (A. C.), 4.
Example in nomenclature, Ward (L. F.), 6.
Formations of northern Arkansas, Ulrich, 5.
Geest, McGee, 2.
Genesis of Animikie iron range, Hille, 3.
Geological nomenclature, Bain, 7.
Geological structure of New Mexican bolson plains, Keyes, 29.
Geology of eastern New York, Prosser, 11.
Glacial Lake Jean Nicolet, Upham, 20.
Introduction to geology of Moniteau County, Buckley, 8.
Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich, 8.
Lower Carboniferous of Appalachian basin, Stevenson (J. J.), 4.
Magnesian series of the Northwestern States, Hall (C. W.), 10.
Mauch Chunk of Pennsylvania, Stevenson (J. J.), 1.
Names of coals west of Mississippi River, Keyes, 19.
New term for Upper Cambrian series, Walcott, 8.
Nomenclature and classification of sedimentary formations, Williams (H. S.), 8.
Nomenclature of Lake Superior formations, Willmott, 2.
Nomenclature of Ohio geological formations, Prosser, 10, 15.
Nomenclature of the gold-bearing metamorphic series of Nova Scotia, Woodman, 1.
Nomenclature of types in natural history, Schuchert and Buckman, 1.
Ordovician rocks of Kentucky and their Bryozoa, Nickles, 6.
Permian formations of Kansas, Prosser, 14.
Permian question in America, Keyes, 31.
Portage crinoids, Clarke (J. M.), 23.
Quantitative classification of igneous rocks, Cross and others, 2.
Regulation of nomenclature in work of United States Geological Survey, Gilbert, 15.
Report on Lake Superior region, Van Hise and others, 1.

Nomenclature—Continued.
Results of the late Minnesota geological survey, Winchell (N. H.), 13.
Significance of term Sierran, Hershey, 8.
Suggestion from the State geologist, Lane, 4.
Term Bradfordian, Bather, 1.
Twenty-fourth Annual Report United States Geological Survey, Walcott, 10.
Word geest in geology, Dryer, 3.

North Carolina.
Asheville folio, Keith, 9.
Atlantic coast Triassic coal field, Woodworth, 4.
Biennial report of the State geologist, Holmes (J. A.), 1, 2.
Carolina gold deposits, Weed, 3.
Carolina tin belt, Graton, 3.
Cement materials and industry of the United States, Eckel, 34.
Clays of the United States, Ries, 6.
Copper-bearing rocks of Virgilina copper district, Watson (T. L.), 6.
Copper deposits of Appalachian States, Weed, 17.
Copper deposits of southern United States, Weed, 2.
Corundum of North Carolina, Pratt and Lewis, 1.
Corundum in North Carolina, Ropes, 1.
Cranberry folio, Keith, 4.
Forms of sand dunes, Cobb, 4.
Gold in North Carolina, Moore (F.), 1.
Granites of North Carolina, Watson (T. L.), 13, 16.
Greeneville folio, Keith, 11.
Iron of meteoric origin, Pratt, 1.
Iron-ore deposits of the Cranberry district, Keith, 5.
Leopardite, Watson (T. L.), 14.
Marble and talc of North Carolina, Pratt, 7.
Meteoreisen von Locust Grove, Cohen, 1.
Meteoreisen von Nenntmannsdorf und Persimmon Creek, Cohen, 6.
Meteoreisen von Persimmon Creek, Klein, 2.
Meteoreisen-Studien, Cohen, 4.
Meteorite from Hendersonville, Glenn, 3.
Mining industry in North Carolina, Pratt, 4, 8, 9–11.
Mount Mitchell folio, Keith, 12.
New Palæotrochis locality, Cobb, 3.
Norfolk folio, Darton, 7.
Octahedrite and brookite, Robinson (H. H.), 1.
Orbicular gabbro-diorite from Davie County, Watson (T. L.), 15.
Oyster reefs of North Carolina, Grave, 1.
Persimmon Creek meteorite, Tassin, 4.
Purpurite, a new mineral, Graton and Schaller, 1.

North Carolina—Continued.
Recent changes in North Carolina coast, Cobb, 2.
Stream contest along the Blue Ridge, Davis (W. M.), 48.
Talc deposits of North Carolina, Keith, 7.
Tin, Struthers and Pratt, 1.
Tin deposits of the Carolinas, Pratt and Sterrett, 1.
Underground waters of North Carolina, Fuller (M. L.), 24.
Water resources of Cowee and Pisgah quadrangles, North Carolina, Gale, 1.

North Dakota.
Casselton-Fargo folio, Hall and Willard, 1.
Cement materials and industry of the United States, Eckel, 34.
Economic geology of the Pembina region, Berkey, 7.
Glacial drift in the Dakotas, Upham, 27.
Laramie and Fort Union beds, Wilder, 7.
Lignite coal fields of North Dakota, Wilder, 2.
Lignite deposits, Haseltine, 1.
Lignite deposits of North Dakota, Wilder, 1.
Lignite of North Dakota, Wilder, 8.
Lignite on the Missouri, Heart, and Cannon Ball rivers, Wilder, 10.
Lignites of the Missouri Valley, Burchard, 1.
Niagara meteorite, Preston (H. L.), 1.
Origin of North Dakota lignites, Wilder, 5.
Region between the Northern Pacific Railroad and Missouri River, Wood (L. H.), 1.
Report of geological survey, Babcock, 1.
Rocky Mountain coal fields, Storrs (L. S.), 1.
Story of the prairies, Willard, 1.
Topographic features and geological formations of North Dakota, Leonard, 4.
Water resources of Devils Lake region, Babcock, 2.

Ohio.
Arthrodires from the Cleveland shale, Dean, 1.
Berea grit oil sand in Cadiz quadrangle, Griswold, 1.
Bituminous coal field of Ohio, Haseltine, 2.
Carboniferous of the Appalachian basin, Stevenson (J. J.), 6.
Cement materials and industry of the United States, Eckel, 34.
Changes in drainage near Lancaster, Hyde, 1.
Cincinnati geanticline, Foerste, 10.
Cincinnati group in western Tennessee, Foerste, 6.

Ohio—Continued.
Classification of the Ordovician rocks of Ohio and Indiana, Foerste, 12.
Classification of the Waverly series, Prosser, 1.
Clays of the United States, Ries, 6.
Cleveland water-supply tunnel, Pierce, 1.
Composition and occurrence of petroleum, Mabery, 3.
Corning oil and gas field, Bownocker, 2.
Delaware limestone, Prosser, 13.
Devonian era in Ohio basin, Claypole, 5.
Drainage modifications in Knox, Licking, and Coshocton counties, Clark (W. Blair), 1.
Drainage modifications in Ohio, West Virginia, and Kentucky, Tight, 4.
Drainage modifications in Washington and adjacent counties, Tight, 2.
Eastern Ohio oil fields, Griswold, 2.
Evidences of caves of Put-in-Bay on question of land tilting, Fuller (M. L.), 16.
Field geology in Ohio State University, Lamb, 1.
Field geology in Ohio State University, Mead (C. S.), 1.
Formation of Sandusky Bay, Moseley, 2.
Geology of Cincinnati, Nickles, 3.
Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.
Gypsum deposits in Ohio, Peppel, 1.
History of Little Miami River, Bownocker, 1.
Hydration caves, Kraus, 7.
Lake Licking, a contribution to the buried drainage of Ohio, Tight, 1.
Lime resources of Ohio, Orton and Peppel, 1.
Lower Carboniferous of Appalachian basin, Stevenson (J. J.), 4.
Manufacture of hydraulic cements, Bleininger, 1.
Meteoreisen von Cincinnati, Cohen, 3.
Names for the formations of the Ohio Coal Measures, Prosser, 4.
Natural features and economic development of drainage areas in Ohio, Flynn and Flynn, 1.
New fossil plants from Carboniferous and Devonian, Herzer, 4.
New fossil sponge from Coal Measures, Herzer, 3.
New fossils from Corniferous, Hamilton, and Medina shales, Herzer, 5.
New points on the fin attachment of Dinichthys and Cladodus, Clark (W.), 1.
Nomenclature of Ohio geological formations, Prosser, 10, 15.
Occurrence and distribution of celestite-bearing rocks, Kraus, 4.
Ohio bowlders containing huronite, Wright (A. A.), 2.
Ohio natural-gas fields, Bownocker, 4.
Oil and gas producing rocks of Ohio, Bownocker, 3.
On an unrecognized coal horizon in northeastern Ohio, Claypole, 1.
On the Salina group in northeastern Ohio, Claypole, 2.
Ordovician rocks of Kentucky and their Bryozoa, Nickles, 6.
Organization and work of the geological survey of Ohio, Orton, 1.
Origin of caves of Put-in-Bay, Kraus, 6.
Petroleum and natural gas in Ohio, Bownocker, 5.
Pre-Glacial drainage conditions in vicinity of Cincinnati, Fowke, 2.
Pre-Glacial drainage in southwestern Ohio, Miller (A. M.), 1.
Pre-Glacial drainage of Ohio, Fowke, 1.
Pre-Glacial drainage of Wayne and adjacent counties, Todd (J. H.), 1.
Psaronius, Herzer, 1.
Report of bowlder committee, Wright (G. F.), 1, 2.
Richmond group and its subdivisions, Nickles, 5.
Richmond Group of Cincinnati anticline, Foerste, 8.
Salt deposits of northeastern Ohio, Bownocker, 6.
Shaw mastodon, Hayes (S.), 1.
Shifting of faunas, Williams (H. S.), 4.
Six new species, including two new genera, of fossil plants, Herzer, 2.
Structure of Dinichthys, Wright (A. A.), 1.
Structure of two Dinichthyds, Hussakof, 2.
Subdivisions of the Ordovician of Indiana, Foerste, 9.
Sunbury shale of Ohio, Prosser, 6.
Thickness of Columbus limestone, Griggs, 1.
Topography and geology of Clifton Gorge, Wells (W. E.), 1.
Topography of Athens and vicinity, Stearns (R. E. C.), 3.
Underground waters of Ohio, Leverett, 13.
Upper Paleozoic rocks of Ohio and Pennsylvania, Girty, 10.
Use of the term Bedford limestone, Prosser, 2.
Waverly formations of central Ohio, Prosser and Cumings, 1.

Oklahoma.
Age of Red Beds, Adams (G. I.), 1.
Age of the Red Beds, Beede, 3.
Building stone of Oklahoma, Schramm, 1.
Cement materials and industry of the United States, Eckel, 34.
Contact of Permian with Pennsylvanian in Oklahoma, Kirk (C. T.), 1.
Dikes in the Oklahoma Panhandle, Waldo, 1.

Oklahoma—Continued.
- Fossils from the Red Beds, Gould, 1.
- Geology and underground water resources of the central Great Plains, Darton, 18.
- Geology and water resources of Oklahoma, Gould, 14.
- Geology of Arbuckle and Wichita mountains, Taff, 13.
- Geology of Oklahoma, Gould, 9.
- Geology of Seminole, Creek, Cherokee, and Osage nations, Gould, 2.
- Geology of the Antelope Hills, Sherwin, 1.
- Geology of the Glass Mountains, White (M.), 1.
- Geology of the Wichita Mountains, Gould, 13.
- Gypsum deposits in Oklahoma, Gould, 11.
- Invertebrate paleontology of Red Beds, Beede, 8.
- Kansas-Oklahoma-Texas gypsum hills, Gould, 4.
- Oklahoma gypsum, Gould, 10.
- Oklahoma limestones, Gould, 8.
- Oklahoma salt plains, Gould, 7.
- Origin of gypsum deposits, Sherwin, 2.
- Ouachita and Arbuckle Mountain sections, Taff, 1.
- Report geological survey of Oklahoma, Van Vleet, 1.
- Reported gold deposits of the Wichita Mountains, Bain, 8, 9.
- Reported ore deposits of Wichita Mountains, Bain, 10.
- Southern extension of the Marion and Wellington formations, Gould, 6.
- Springs of Kansas and Oklahoma, Gould, 3.
- Stratigraphic relations of Red Beds, Adams (G. I.), 11.
- Vertebrate fossils from Permian beds of Oklahoma, Case, 3.

Ordovician.
- *Appalachian region.*
  - Asheville folio, Keith, 9.
  - Bauxite deposits of Georgia, Watson (T. L.), 12.
  - Cambro-Ordovician limestones of the Valley of Virginia, Campbell (H. D.), 1.
  - Cockeysville marble, Mathews and Miller, 1.
  - Correlation of Piedmont formations, Mathews, 6.
  - Greenville folio, Keith, 11.
  - Lead and zinc deposits of Virginia, Watson (T. L.), 17.
  - Manganese ore deposits of Georgia, Watson (T. L.), 9.
  - Maynardville folio, Keith, 1.
  - Ordovician section near Bellefonte, Collie, 3.
  - Paleozoic Appalachia, Willis, 1.
  - Paleozoic faunas, Weller, 6.

Ordovician—Continued.
- *Appalachian region*—Continued.
  - Paleozoic limestones of Kittatinny Valley, Kümmel and Weller, 1.
  - Piedmont district of Pennsylvania, Bascom, 3.
  - Rocks of Green Pond Mountain region, Kümmel and Weller, 2.
  - Subdivisions of Shenandoah limestone, Bassler, 4.
- *Canada.*
  - Artesian wells of Montreal, Adams and Le Roy, 1.
  - Annual report of geological section of Ottawa Field-Naturalists' Club, Ami, 25.
  - Exploration of northern side of Hudson Strait, Bell (Robert), 1.
  - First Eparchean formation, Ami, 41.
  - Formation of sedimentary deposits, Wilson (A. W. G.), 7.
  - Geological correlations in New Brunswick, Bailey (L. W.), 3.
  - Geological exploration in district of White Bay, Howley, 1.
  - Geological formations about Montreal, Ami and Adams, 1.
  - Geological record of Rocky Mountain region, Dawson, 2.
  - Geologie von Canada, Haas, 2.
  - Geology and natural resources of Ottawa and vicinity, Ells (R. W.), 7.
  - Geology of Renfew, Addington, Frontenac, Lanark, and Carleton counties, Ells (R. W.), 20.
  - Geology of Province of Quebec, Ells (R. W.), 8.
  - Geology of St. Helen's Island, Nolan and Dixon, 1.
  - Geology of the principal cities in eastern Canada, Ami, 1.
  - Geology of the Three Rivers map sheet, Ells (R. W.), 2.
  - Geology of west shore of Lake Winnipeg, Dowling, 1.
  - Monographie de l'Ile d'Anticosti, Schmitt, 1.
  - New Brunswick, Bailey (L. W.), 5.
  - Ordovician succession in eastern Ontario, Ami, 39.
  - Percé: sketch of its geology, Clarke (J. M.), 26.
  - Petroleum and natural gas [in Ontario], Corkill, 2.
  - Rock contacts in the Kingston district, Ells (R. W.), 15.
  - Synopsis of geology of Canada, Ami, 2.
- *Great Basin region.*
  - Clifton folio, Lindgren, 28.
  - Copper deposits of Clifton-Morenci district, Lindgren, 29.
  - Geology of Nevada, Spurr, 6.
- *Great Lakes region.*
  - Baraboo iron-bearing district of Wisconsin, Weidman, 5.

Ordovician—Continued.
- *Great Lakes region*—Continued.
  - Geological reconnaissance along north shore, Russell, 23.
  - Menominee district of Michigan, Bayley, 1.
- *Great Plains region.*
  - Geology and underground water resources of the central Great Plains, Darton, 18.
  - Geology of the Black Hills, Jaggar, 5.
  - Sundance folio, Darton, 26.
- *Mississippi Valley region.*
  - Copper deposits of Missouri, Bain and Ulrich, 2.
  - Evolution of lowlands of southeastern Missouri, Marbut, 1.
  - Fauna of Magnesian series, Sardeson, 2.
  - Fayetteville folio, Adams and Ulrich, 1.
  - Formations of northern Arkansas, Ulrich, 5.
  - Geological formations of Iowa, Calvin, 4.
  - Geological section across northern Illinois, Udden (Johan A.), 1.
  - Geology of clays, Beyer and Williams, 2.
  - Geology of Clinton County, Udden (Jon A.), 1.
  - Geology of Fayette County, Savage, 8.
  - Geology of Howard County, Iowa, Calvin, 10.
  - Geology of Illinois, Rolfe, 1.
  - Geology of Miller County, Ball and Smith, 1.
  - Geology of Minnesota, Hall (C. W.), 7.
  - Geology of Missouri, Gallaher, 1.
  - Geology of Moniteau County, Van Horn, 1.
  - Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
  - Lower Silurian formations of Wisconsin and Minnesota, Sardeson, 8.
  - Ordovician rocks of southern Indiana, Cumings, 4.
  - Physiography and geology of the Ozark region, Adams (G. I.), 3.
  - Saccharoidal sandstone, Broadhead, 8.
  - St. Peter sandstone, Sardeson, 1.
  - Tahlequah folio, Taff, 17.
  - Upper Ordovician at Vevay, Cumings, 3.
  - Zinc and lead deposits of Arkansas, Adams (G. I.), 15.
  - Zinc and lead deposits of northwestern Illinois, Bain, 14.
- *New England and New York.*
  - Analysis of Washington marble, Richardson (C. H.), 1.
  - Calciferous formation of Mohawk Valley, Cleland, 3.
  - Crown Point section, Raymond (P. E.), 1.
  - Faunas of the Ordovician at Glens Falls, White (T. G.), 1.

Ordovician—Continued.
- *New England and New York*—Continued.
  - Faunas of the Trenton, Raymond (P. E.), 2.
  - Field work at Larrabee's Point, Vermont, Shimer, 5.
  - Geology of Adirondack region, Cushing, 10.
  - Geology of Grand Isle, Perkins, 7, 11.
  - Geology of Paradox Lake quadrangle, Ogilvie, 6.
  - Geology of Taconic Range, Dale, 3.
  - Geology of the Hudson Valley, Dale, 5.
  - Geology of the vicinity of Little Falls, Cushing, 9.
  - Hudson River beds near Albany, Ruedemann, 1.
  - Lime and cement industries of New York, Ries, 4.
  - Lower Silurian system of eastern Montgomery County, N. Y., Cumings, 6.
  - Pre-Cambrian Highlands, Merrill (F. J. H.), 6.
  - Quarry industry in southeastern New York, Eckel, 6.
  - Report of State paleontologist, Clarke (J. M.), 11.
  - Stratigraphy of Becraft Mountain, Grabau, 9.
  - Stratigraphy of Mohawk Valley, Prosser, 5.
  - Terranes of Orange County, Vt., Richardson (C. H.), 2.
  - Trenton conglomerate of Rysedorph hill, Ruedemann, 2.
- *Ohio Valley region.*
  - Cement resources of Alabama, Smith (E. A.), 3.
  - Cincinnati geanticline, Foerste, 10.
  - Cincinnati group in western Tennessee, Foerste, 6.
  - Classification of the Ordovician rocks of Ohio and Indiana, Foerste, 12.
  - Columbia folio, Hayes and Ulrich, 1.
  - Geology of Cincinnati, Nickles, 3.
  - Lead and zinc bearing rocks of Kentucky, Miller (A. M.), 4.
  - Nomenclature of Ohio geological formations, Prosser, 10, 15.
  - Oil and gas producing rocks of Ohio, Bownocker, 3.
  - Ordovician and Silurian rocks of Indiana, Foerste, 11.
  - Ordovician rocks of Kentucky and their Bryozoa, Nickles, 6.
  - Petroleum and natural gas in Ohio, Bownocker, 5.
  - Richmond group and its subdivisions, Nickles, 5.
  - Richmond group of Cincinnati anticline, Foerste, 8.
  - Ripple marks in Hudson limestone of Jefferson County, Culbertson, 1.
  - Ripple marks in Hudson River limestone, Moore and Hole, 1.
  - Section across southern Indiana, Newsom, 3.

Ordovician—Continued.
Ohio Valley—Continued.
Silurian and Devonian limestones of western Tennessee, Foerste, 7.
Structural features of Homotrypa, Bassler, 1.
Subdivisions of the Ordovician of Indiana, Foerste, 9.
Topography and geology of Indiana, Hopkins (T. C.), 11.
Trenton rock petroleum, Blatchley and Sheak, 1.
Rocky Mountain region.
Aladdin folio, Darton and O'Harra, 1.
Carboniferous formations and faunas of Colorado, Girty, 3.
Geology of Castle Rock region, Colorado, Lee (W. T.), 2.
Stratigraphy of Black Hills, Bighorn Mountains, and Rocky Mountain front range, Darton, 16.
Sundance folio, Darton, 26.
Southwestern region.
Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
Geology and water resources of Oklahoma, Gould, 14.
Geology of Arbuckle and Wichita mountains, Taff, 13.
Geology of the Wichita Mountains, Gould, 13.
Stratigraphic sequence in trans-Pecos Texas, Richardson (G. B.), 5.
Tishomingo folio, Taff, 6.
General.
Paleogeography of mid-Ordovicic time, Berkey, 11.
Physical characters and history of some New York formations, Grabau, 17.

Oregon.
Artesian basins in Idaho and Oregon, Russell, 9.
Beach gold and its source, Washburne, 3.
Bohemia mining district of western Oregon, Kimball, 1.
Borax mine in southern Oregon, Dennis, 1.
Cement materials and industry of the United States, Eckel, 34.
Clackamas meteoric iron, Kunz, 9.
Coal fields of Pacific coast, Smith (G. O.), 6.
Coal in Washington near Portland, Diller, 21.
Composition and structure of Klamath Mountains, Diller, 17.
Contribution to petrography of John Day Basin, Calkins, 1.
Coos Bay coal fields, Rockwell, 1.
Coos Bay folio, Diller, 4.
Cretaceous deposits of Pacific coast, Anderson (F. M.), 3.
Cretaceous fossils from John Day Basin, Stanton, 1.
Eclogites in California, Holway, 1.
Fossil flora of John Day basin, Knowlton, 14.

Oregon—Continued.
Fossil land shells of the John Day basin, Stearns (R. E. C.), 1.
Fossil plants from the Shasta group, Fontaine, 3.
Fossil sea lion from Miocene, True, 1.
Fossil shells of John Day region, Stearns (R. E. C.), 3.
Fossil turtles from Oregon, Hay, 9.
Geological section through John Day Basin, Merriam (J. C.), 2.
Geology and petrography of Crater Lake National Park, Diller and Patton, 1.
Geology of Crater Lake, Diller, 2.
Geology of Idaho and Oregon, Russell, 8.
Geology of John Day Basin, Merriam (J. C.), 1.
Geology of the Three Sisters, Fairbanks, 1.
Geology and water resources of central Oregon, Russell, 21.
Gisements des minerais de mercure, Demaret, 2.
Glaciers of Mount Hood and Mount Adams, Reid (H. F.), 17.
Gold belt of Blue Mountains, Lindgren, 4.
Gold mining in eastern Oregon, Beadle, 1.
Gold production of North America, Lindgren, 16.
Great lava-flood, Redway, 1.
Gypsum deposits in Oregon, Lindgren, 20.
Hanging valleys, Russell, 20.
Iron-nickel alloy, awaruite, Jamieson, 1.
John Day fossil beds, Merriam (J. C.), 3.
Jurassic flora of Douglas County, Oreg., Fontaine, 1.
Klamath Mountains, Diller, 1.
Marine sediments of eastern Oregon, Washburne, 1.
Mesozoic of southwestern Oregon, Louderback, 6.
Meteorite in Supreme Court, Winchell (N. H.), 28.
Mineral resources and mining in Oregon, Drake, 1.
Minerals in gold quartz veins, Lindgren, 3.
Mounts Hood and Adams and their glaciers, Reid (H. F.), 6.
Mylagaulodon from upper John Day, Sinclair, 3.
Nampa folio, Lindgren and Drake, 1.
Native gold in igneous rocks, Mallery, 1.
New fossil tapir in Oregon, Sinclair, 1.
Oregon nickel prospects, Ledoux, 1.
Placer gold in Oregon, Washburne, 2.
Port Orford folio, Diller, 11.
Quecksilberablagerungen in Oregon, Wendeborn, 2.

Oregon—Continued.
Quicksilver deposits of Oregon, Dennis, 2.
Reconnaissance of Mount Hood and Mount Adams, Reid (H. F.), 4.
Report on the Clarno flora, Knowlton, 1.
Report on the flora of the Mascall formation, Knowlton, 2.
Rodents and ungulates from the John Day series, Sinclair, 6.
So-called iron ore near Portland, Diller, 20.
Status of Mesozoic floras, Ward, 5.
Topographic development of Klamath Mountains, Diller, 10.
Trias in northeastern Oregon, Lindgren, 2.
Two islands, Condon, 1.
Willamette meteorite, Ward (H. A.), 8.
Willamette meteorite, Winchell (N. H.), 29.
Wreck of Mount Mazama, Diller, 8.

Paleogeography.
Age of the Missouri River, Upham, 26.
Cobleskill limestone of New York, Hartnagel, 1.
Columbia folio, Tennessee, Hayes and Ulrich, 1.
Devonian era in Ohio basin, Claypole, 5.
Devonic and Ontaric formations of Maryland, Schuchert, 7.
Deposition of the Appalachian Pottsville, White (D.), 14.
Evolution of the Antilles, Falconer, 2.
Formations of northern Arkansas, Ulrich, 5.
Glacial waters from Oneida to Little Falls, Fairchild, 8.
Graptolites of New York, Ruedemann, 8.
Iroquois beach in Ontario, Coleman, 16, 17.
Jurassic rocks of East Greenland, Skeat, 1.
Lake Quibiris, an ancient Pliocene lake in Arizona, Blake (W. P.), 6.
Marine Trias of western America, Smith (J. P.), 5.
Naples fauna in western New York, Clarke (J. M.), 19.
Outlines of continents in Tertiary times, Matthew (W. D.), 18.
Paleogeography of mid-Ordovicic time, Berkey, 11.
Paleogeography of St. Peter time, Berkey, 9.
Periodic migrations between the Asiatic and American coasts of the Pacific Ocean, Smith (J. P.), 4.
Physical characters and history of some New York formations, Grabau, 17.
Submerged tributary to the pre-Glacial river of the Gulf of St. Lawrence, Poole, 7.

Paleontology.
Algonkian.
Sur les formations précambriennes fossilifères, Walcott, 4.
Cambrian.
Acrothyra, a new genus of Etcheminian brachiopods, Matthew (G. F.), 12.
Acrothyra and Hyolithes, a comparison, Matthew (G. F.), 7.
Cambrian Brachiopoda, Walcott, 1, 6, 12.
Cambrian Brachiopoda and Mollusca of Mount Stephen, Matthew (G. F.), 19.
Cambrian deposits of North Attleboro, Gorham, 1.
Cambrian faunas: Protolenus, Matthew (G. F.), 27.
Cambrian fossils from Cape Breton, Matthew (G. F.), 9.
Cambrian fossils of St. François County, Beecher, 2.
Cambrian of Cape Breton, with descriptions of new species, Matthew (G. F.), 12.
Cambrian Ostracoda from northeastern America, Jones (T. R.), 1.
Cambrian rocks and fossils of Cape Breton, Matthew (G. F.), 14.
Cambrian rocks in eastern Canada, Matthew (G. F.), 29.
Cambrian rocks of Cape Breton, Matthew (G. F.), 20.
Cambric Dictyonema fauna of eastern New York, Ruedemann, 7.
Development in size of the inarticulate brachiopods of the basal Cambrian, Matthew (G. F.), 17.
Did the upper Etcheminian fauna invade eastern Canada from the southeast? Matthew (G. F.), 18.
Eurypterid remains in the Cambrian, Beecher, 3.
Graptolites of New York, Ruedemann, 8.
Hyolithes gracilis and related forms, Matthew (G. F.), 8.
Les plus anciennes faunes paléozoiques, Matthew (G. F.), 5.
Middle Cambrian fossils, Woodward (H.), 1.
New species of Olenellus, Wanner, 1.
Oboloid shells of the Cambrian system in Canada, Matthew (G. F.), 16.
Ostracoda of basal Cambrian rocks in Cape Breton, Matthew (G. F.), 13.
Paleozoic faunas, Weller, 6.
Paleozoic rocks of northwestern New Jersey, Van Ingen, 3.
Phylogenic stage of Cambrian Gastropoda, Sardeson, 12.
Physical geography, etc., of Essex County, Mass., Sears, 1.
Preliminary notice of Etcheminian fauna, Matthew (G. F.), 1.
Report of State paleontologist, Clarke (J. M.), 5.

Paleontology—Continued.
Carboniferous.
Bathygnathus borealis Leidy, and the Permian of Prince Edwards Island, Case, 13.
Batrachian footprints, Matthew (G. F.), 23, 30.
Batrachian footprints of Carboniferous system, Matthew (G. F.), 21.
Border line between the Paleozoic and Mesozoic, Smith (J. P.), 1.
Campyloprion, a new form of Edestus-like dentition, Eastman, 3.
Carboniferous ammonoids of America, Smith (J. P.), 3.
Carboniferous cestraciont and acanthodian sharks, Eastman, 6.
Carboniferous cochliodonts, Branson, 1.
Carboniferous faunas of Mississippi Valley in the Rocky Mountain region, Keyes, 41.
Carboniferous ferns from Mazon Creek, Illinois, Sellards, 3.
Carboniferous fish fauna of Mazon Creek, Eastman, 4.
Carboniferous fishes from central Western States, Eastman, 10.
Carboniferous formations and faunas of Colorado, Girty, 3.
Carboniferous formations of Humboldt, Iowa, Sardeson, 11.
Carboniferous fossils of Bisbee quadrangle, Girty, 6.
Carboniferous invertebrates, Beede, 1.
Carboniferous of Sangre de Cristo Range, Colorado, Lee (W. T.), 5.
Carboniferous rocks of Kansas section, Adams, Girty, and White, 1.
Carboniferous terrestrial arthropod fauna of Illinois, Melander, 1.
Coal Measures Bryozoa of Nebraska, Condra, 2.
Coal Measures faunal studies, Beede and Rogers, 1.
Coal Measures forest near Socorro, Herrick (C. L.), 3.
Coal Measures faunal studies, Beede, 6.
Codonotheca, new type of spore-bearing organ from Coal Measures, Sellards, 6.
Columbia folio, Tennessee, Hayes and Ulrich, 1.
Contributions to Indian paleontology, Greene, 2, 3, 5, 7, 11–14.
Correlation of the Kinderhook formations, Weller, 1.
Contributions to Devonian paleontology, Williams and Kindle, 1.
Cyclus from Coal Measures, Rogers, 3.
Developmental stages of Orthothetes minutus, Cumings, 5.
Distribution and synonymy of Ptychospira sexplicata, Greger, 1.
Fauna of the Mentor, Jones (A. W.), 2.
Fauna of the Permian, Beede, 2.
Fossil faunas of Olean quadrangle, Butts, 1.

Paleontology—Continued.
Carboniferous—Continued.
Fossil insects in Permian of Kansas, Sellards, 7.
Fossil plants from Carboniferous and Permian formations of Kansas, White (D.), 10.
Fossil plants in the Permian, Sellards, 2.
Fossil plants of Onaga, Crevecœur, 1.
Fossils from Subcarboniferous rocks of northeastern Missouri, Rowley, 2.
Fossils from the Red Beds, Gould, 1.
Fossils from the upper Paleozoic rocks, Rowley, 1.
Genus Rhynchopora, Greger, 2.
Geological horizon of the Kanawha black flint, White (I. C.), 4.
Geology of Copper River region, Mendenhall, 8.
Invertebrate fossils from Carboniferous section of Kansas, Girty, 4.
Invertebrate paleontology of Red Beds, Beede, 8.
Kinderhook faunal studies, Weller, 2.
Kinderhook faunas, Weller, 11.
Klamath Mountain section, Diller, 12.
Koprolithen des Perms von Texas, Neumayer, 1.
Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich, 8.
List of fossils from lower half of Conemaugh formation near Morgantown, W. Va., White (I. C.), 5.
Lyon County geology, Smith (A. J.), 2.
Mauch Chunk of Pennsylvania, Stevenson (J. J.), 1.
Micro-organismes des combustibles fossiles, Renault, 1.
Missouri paleontology, Rowley, 4.
Missourian and Permo-Carboniferous fish fauna of Kansas and Nebraska, Eastman and Barbour, 1.
Morphology of the skull of Dimetrodon, Case, 11.
Myalina from Coal Measures of Texas, Whitfield, 2.
New Bryozoa from Coal Measures of Nebraska, Condra, 1.
New forms of Carboniferous fish remains, Eastman, 9.
New genus and species of Lower Carboniferous bryozoan, Whitfield, 8.
New fossil plants from Carboniferous and Devonian, Herzer, 4.
New fossil sponge from Coal Measures, Herzer, 3.
New fossils from Upper Carboniferous of Kansas, Beede, 4.
New molluscan genera from the Carboniferous, Girty, 5.
Note on Hylopus of Dawson, Matthew (G. F.), 28.
Orthothetes minutus n. sp., from the Salem limestone, Cumings, 2.
Osteology of Embolophorus dollovianus, Case, 4.

Paleontology—Continued.
Carboniferous—Continued.
Osteology of skull of Dimetrodon, Case, 7.
Paleobotanical aspects of the upper Paleozoic in Nova Scotia, White (D.), 5.
Paleontologic results of areal survey of Olean quadrangle, Clarke (J. M.), 7.
Paleontology of the Bingham mining district, Girty, 12.
Paleozoic batrachian footprints, Matthew (G. F.), 25.
Paleozoic cockroaches, Sellards, 5, 8.
Paleozoic ostracods from Maryland, Jones (T. R.), 4.
Paraphorhynchus, Weller, 9.
Peculiar modification among Permian dipnoans, Eastman, 11.
Pelycosaurierreste von Texas, Broili, 4.
Permian life of Texas, Sternberg, 2.
Permian Xiphosuran from Kansas, Beecher, 10.
Permische Stegocephalen und Reptilien aus Texas, Broili, 2.
Permo-Carboniferous sharks, Eastman, 2.
Pleuroptyx in Iowa Coal Measures, Udden, 7.
Possible new coal plants, Gresley, 1.
Potsdam sandstone of Lake Champlain Basin, Van Ingen, 4.
Pottawattamie and Douglas formations, Rogers, 1.
Prodromites, a new ammonite genus, Smith and Weller, 1.
Psaronius, Herzer, 1.
Relations of some Carboniferous faunas, Girty, 11.
Report of State geologist of Nebraska, Barbour (E. H.), 8.
Reproduction of lost parts in a fossil crinoid, Whitfield, 9.
Revision of Paleozoic Paleechinoidea, Klem, 1.
Revision of Phyllocarida from Chemung and Waverly groups of Pennsylvania, Beecher, 8.
Rhombopora lepidodendroides Meek, Condra, 3.
Six new species, Knowlton, 13.
Six new species, including two new genera of fossil plants, Herzer, 2.
Species of Whittleseya and their systematic relations, White (D.), 4.
Stigmaria structure, Poole, 1.
Structure of fore foot of Dimetrodon, Case, 8.
Tæniopteris of the Permian, Sellards, 1.
Triticites, new genus of Carboniferous foraminifers, Girty, 9.
Two Carboniferous genera, Cockerell, 3.
Ueber Diacranodus texensis Cope, Broili, 3.
Upper Permian in western Texas, Girty, 2.

Paleontology—Continued.
Carboniferous—Continued.
Validity of Idiophyllum rotundifolium, Sellards, 4.
Vertebrate fossils from Permian beds of Oklahoma, Case, 3.
Vertebrates from Permian of Texas, Case, 5.
Cretaceous.
Atlantic highlands section, Prather, 4.
Ceratopsia from the Laramie, Wyoming, Hatcher, 22.
Chondrodonta, Stanton, 2.
Coal resources of Wyoming, Trumbull, 1.
Corals of Buda limestone, Vaughan, 17.
Correction of Professor Osborn's note, Hatcher, 13.
Cretaceous actinopterous fishes, Hay, 10.
Cretaceous and Tertiary plants of Canada, Penhallow, 4.
Cretaceous and Tertiary section in Montana, Douglass, 3.
Cretaceous beds of Long Island, Hollick, 7.
Cretaceous deposits of Pacific coast, Anderson (F. M.), 3.
Cretaceous fish Portheus molossus, Osborn, 35.
Cretaceous fishes, Williston, 1.
Cretaceous formations and faunas of New Jersey, Weller, 7.
Cretaceous fossils from the John Day basin, Stanton, 1.
Cretaceous fossils of the Bisbee quadrangle, Stanton, 6.
Cretaceous turtles, Wieland, 2.
Cretaceous turtles of New Jersey, Wieland, 6, 7.
Cretaceous turtles of New Jersey: Agomphus, Wieland, 13.
Crustacea of the Cretaceous, Pilsbry, 1.
Dakota Cretaceous of Kansas and Nebraska, Gould, 5.
Development of Scaphites, Smith (W. D.), 1.
Dinosaurian genus Creosaurus Marsh, Williston, 2.
Dinosaurs from the Cretaceous of Alberta, Lambe, 10.
Dinosaurs in Fort Pierre shales, Douglass, 5.
Discovery of amber on Staten Island, Hollick, 16.
Distinctive characters of the mid-Cretaceous fauna, Osborn, 12.
Elosaurus parvus, a new genus and species of Sauropoda, Peterson and Gilmore, 1.
Fauna of Cliffwood clays, Weller, 10, 13.
Flora of the Matawan formation, Berry, 5.
Fossil Cyrena from Alberta, Whiteaves, 6.

Paleontology—Continued.
- *Cretaceous*—Continued.
  - Fossil ferns from the Laramie group of Colorado, Hollick, 5.
  - Fossil floras of the Yukon, Knowlton, 17.
  - Fossil grasses and sedges, Berry, 10.
  - Fossil petal and fruit from Kansas, Hollick, 6.
  - Fossil plant remains at Kreisherville, Hollick, 14.
  - Fossil plants from British Columbia and the Northwest Territories, Penhallow and Ami, 1.
  - Fossil plants from Kansas, Hollick, 9.
  - Fossil plants from the Shasta group, Fontaine, 3.
  - Fossil plants of the Judith River beds, Knowlton, 18.
  - Fossils from the Vancouver Cretaceous, Whiteaves, 12.
  - Fossils of the Texas Cretaceous, Prather, 1.
  - Fresh-water molluscan faunule from Cretaceous of Montana, Stanton, 4.
  - Ganoid- und Knochen-fische aus der Kreide formation von Kansas, Loomis, 1.
  - Genera and species of Trachodontidæ Marsh, Hatcher, 9.
  - Geological and botanical notes: Cape Cod and Chappaquidick Island, Hollick, 4.
  - Geology and paleontology of the Judith River beds, Stanton and Hatcher, 1.
  - Geology of Cerrillos Hills, Johnson (D. W.), 5.
  - Geology of Potomac group in middle Atlantic slope, Clark and Bibbins, 1.
  - Geology of the John Day Basin, Merriam (J. C.), 1.
  - Grasping power of manus of Ornithomimus, Lambe, 9.
  - Greatest flying creature, the great pterodactyl Ornithostoma, Lucas (F. A.), 10.
  - Heteroceras simplicostatum, Whitfield, 3.
  - Hind limb of Protostega, Williston, 4.
  - Interesting Cretaceous Chimæroid egg-case, Gill, 2.
  - Kreide-Ammoniten von Texas, Lasswitz, 1.
  - Laramie Cretaceous of Wyoming, Williston, 13.
  - Lower Cretaceous plants from Montana, Fontaine, 4.
  - Lytoceras from the Cretaceous rocks, Whiteaves, 2.
  - Marine turtle Archelon, Wieland, 3.
  - Megacerops tyleri, Lull, 5.
  - Mollusca of Buda limestone, Shattuck, 8.
  - New and little-known fossil vertebrates, Hatcher, 3.
  - New armed dinosaur, Williston, 26.

Paleontology—Continued.
- *Cretaceous*—Continued.
  - New genera and species from Belly River series, Lambe, 3.
  - New Niobrara Taxochelys, Wieland, 12.
  - New dinosaur, Stegosaurus marshi, Lucas (F. A.), 2.
  - New or little-known extinct reptiles, Williston, 10.
  - New species of Baëna from Laramie beds of Wyoming, Hay, 2.
  - New species of Unio, Whiteaves, 1.
  - New turtle from the Kansas Cretaceous, Williston, 3.
  - New turtles from Judith River beds of Montana, Hay, 15.
  - New vertebrates of the mid-Cretaceous, Osborn, 13.
  - New Unios from the Laramie, Whitfield, 6.
  - Occurrence of ichthyosaur-like remains, Merriam (J. C.), 17.
  - Old swamp bottom, Berry, 12.
  - Origin of North American Unionidæ, White (C. A.), 1.
  - Paleobotany of Cretaceous of Long Island, Hollick, 11.
  - Paleontology of the Boulder area, Henderson (J.), 3.
  - Palm from mid-Cretaceous, Berry, 11.
  - Plants from the Matawan formation, Berry, 4.
  - Position and nature of Maryland Cycads, Bibbins, 2.
  - Protostega gigas and other Cretaceous reptiles, Sternberg, 5.
  - Pseudoceratites of the Cretaceous, Hyatt, 1.
  - Recent literature on Laramie formation, Hay, 7.
  - Reconstruction of a Cretaceous dinosaur, Beecher, 6.
  - Remarkable slab of crinoids, Hovey (E. O.), 14.
  - Report of State geologist of Nebraska, Barbour (E. H.), 8.
  - Report on various collections of fossil plants from the older Potomac of Virginia and Maryland, Fontaine, 5.
  - Restoration of Dolichorhyncops osborni, Williston, 9.
  - Sabal rigida, Hatcher, 5.
  - Skeleton of Nyctodactylus with restoration, Williston, 8.
  - Squamoso-parietal crest of horned dinosaurs, Lambe, 11.
  - Starfish from Cretaceous of Wyoming, Weller, 8.
  - Starfish from the Fort Benton, Douglass, 7.
  - Status of Mesozoic floras, Ward (L. F.), 5.
  - Stratigraphy and paleontology of Black Hills rim, Wieland, 11.
  - Teleorhinus browni, Osborn, 33.
  - Teleosts from the Platte Cretaceous series, Cragin, 1.

Paleontology—Continued.
Cretaceous—Continued.
Teleosts of the upper Cretaceous, Stewart, 1.
Teredo-like shell from Laramie group, Whitfield, 4.
Trionyx foveatus Leidy and Trionyx vagans Cope from Cretaceous rocks of Alberta, Lambe, 5.
Turtle from Cretaceous rocks, Lambe, 1.
Types of invertebrate Cretaceous fossils in the collection of the Academy of Natural Science, Philadelphia, Johnson (C. W.), 2.
Tyrannosaurus and other Cretaceous carniverous dinosaurs, Osborn, 50.
Uintacrinus, Springer (F.), 1.
Uintacrinus and Hemiaster in the Vancouver Cretaceous, Whiteaves, 15.
Winged reptiles, Williston, 7.
Devonian.
Acidaspis from Marcellus shale, Hitchcock (C. H.), 4.
Amnigenia as an indicator of fresh-water deposits, Clarke (J. M.), 4.
Are the St. John plant beds Carboniferous?, Matthew (G. F.), 4.
Arthrodires from the Cleveland shale, Dean, 1.
Beschreibung der Naples-Fauna, Drevermann, 1.
Columbia folio, Tennessee, Hayes and Ulrich, 1.
Contributions to Devonian paleontology, Williams and Kindle, 1.
Contributions to Indiana paleontology, Greene, 1–15.
Coral reefs, ancient and modern, Grant (C. C.), 5.
Corniferous exposure in Anderdon, Nattress, 1.
Corniferous fauna in Appalachian province in North America, Weller, 4.
Correlation of geological faunas, Williams (H. S.), 5.
Crinoid and mollusk from the Portage rocks of New York, Whitfield, 11.
Dentition of Rhynchodus, Eastman, 14.
Description of tracks from mudstones of Knoydart formation, Ami, 28.
Devonian era in Ohio basin, Claypole, 5.
Development of Fenestella, Cumings, 10.
Developmental changes in Devonian brachiopods, Raymond (P. E.), 3.
Devonian fauna of Kwataboahegan River, Parks, 5.
Devonian fish fauna of Iowa, Eastman, 11.
Devonian fossils and stratigraphy of Indiana, Keyes, 1.
Devonian fish remains from Colorado, Eastman, 16.

Paleontology—Continued.
Devonian—Continued.
Devonian fossils of Bisbee quadrangle, Williams (H. S.), 6.
Devonian paleontology, Schuchert, 13.
Devonic crinoids, Wood (Elvira), 3.
Devonic worms, Clarke (J. M.), 18.
Drift fossils, Hollick, 8.
Dwarf fauna of Tully limestone, Loomis, 4.
Evolution of some Devonic spirifers, Grabau, 18.
Fauna of Stafford limestone of New York, Talbot, 1.
Fauna of the Agoniatite limestone of Onondaga County, N. Y., Wilson (J. D.), 1.
Faunal provinces of middle Devonic of America, Schuchert, 5.
Fossil alga from Chemung, New York, White (D.), 6.
Fossil faunas of Olean quadrangle, Butts, 1.
Fossils from the Hackberry group of Iowa, Webster, 2.
Gastropod from the Hackberry group of Iowa, Webster, 1.
Genus Panenka, with description of a new species from Devonian rocks of Ontario, Whiteaves, 4.
Geology of Onondaga County, N. Y., Schneider, 1.
Geology of Perry basin, White (D.), 18.
Geology of Watkins and Elmira quadrangles, Clarke and Luther, 2.
Hamilton formation in central New York, Cleland, 2.
Hamilton fossils from Bethany, New York, Monroe, 1.
Hamilton group of Thedford, Ontario, Shimer and Grabau, 1.
Helderberg invasion of the Manlius, Harris, 7.
Helderbergian fossils near Montreal, Schuchert, 1.
Indigene and alien faunas of New York Devonic, Clarke (J. M.), 10.
Ithaca fauna of central New York, Clarke (J. M.), 27.
Klamath Mountain section, Diller, 12.
Knoydart formation of Nova Scotia, Ami, 8.
Limestones interbedded with shales of Marcellus stage, Clarke (J. M.), 2.
Map of Canandaigua and Naples quadrangles, Clarke and Luther, 1.
Marcellus limestone, Wood (Elvira), 1.
Naples fauna in western New York, Clarke (J. M.), 19.
Nematophyton in New York State Museum, Prosser, 8.
New Agelacrinites, Clarke (J. M.), 3.
New crinoid from the Hamilton, Wood (Elvira), 2.
New fossil plants from Carboniferous and Devonian, Herzer, 4.

Paleontology—Continued.
- *Devonian*—Continued.
  - New fossils from Corniferous, Hamilton, and Medina shales, Herzer, 5.
  - New geological formation in the Devonian, Ami, 4.
  - New points on the fin attachment of Dinichthys and Cladodus, Clark (W.), 1.
  - New species of Cladodus from the Devonian of Colorado, Hay, 4.
  - New Xiphosuran from Upper Devonian of Pennsylvania, Beecher, 5.
  - Notes on Paleozoic crustaceans, Clarke (J. M.), 12.
  - Observations on Romingeria, Beecher, 9.
  - Opening address, geologic section, Grant (C. C.), 1.
  - Organic remains from Messenger Brook, Ami, 47.
  - Paleontologic results of areal survey of Olean quadrangle, Clarke (J. M.), 7.
  - Paleontology of the Iowa Devonian, Webster, 3.
  - Paleozoic faunas, Weller, 6.
  - Paleozoic rocks of northwestern New Jersey, Van Ingen, 3.
  - Parapsonema cryptophysa Clarke und deren Stellung im System, Fuchs, 1.
  - Parasite from Devonian rocks of Hudson Bay, Parks, 6.
  - Percé: sketch of its geology, Clarke (J. M.), 26.
  - "Placoderm," Dinichthys intermedius Newb., Hussakof, 1.
  - Preservation of muscle fibers in sharks of Cleveland shale, Dean, 6.
  - Report of State paleontologist, Clarke (J. M.), 5.
  - Revision of genera and species of Canadian Paleozoic corals, Lambe, 2.
  - Revision of New York Helderbergian crinoids, Talbot, 2.
  - Revision of Phyllocarida from Chemung and Waverly groups of Pennsylvania, Beecher, 8.
  - Rhizopods in Pella beds in Iowa, Udden, 6.
  - Rocks of Rondout, Van Ingen and Clark, 1.
  - Shifting of faunas, Williams (H. S.), 4.
  - Silurian and Devonian limestones, Foerste, 1.
  - Siluric and Devonic faunas of Trilobite Mountain, Shimer, 5.
  - Siluric Cystoidea, Schuchert, 6.
  - Silver Creek hydraulic limestone, Siebenthal, 2.
  - Sponges from the Hamilton group of Indiana, Whitfield, 12.
  - Stratigraphy of Becraft Mountain, Grabau, 9.
  - Structure of Dinichthys, Wright (A. A.), 1.
  - Structure of two Dinichthyds, Hussakof, 2.

Paleontology—Continued.
- *Devonian*—Continued.
  - Tracks from the Knoydart formation, Ami, 3.
  - Tropidoleptus fauna at Canandaigua Lake, Raymond (P. E.), 4.
  - Worm burrows in Chemung of New York, Whitfield, 10.
- *Jurassic.*
  - Atlantosaur and Titanotherium beds of Wyoming, Peck, 4.
  - Brachiosaurus altithorax, Riggs, 6.
  - Crocodile from Wyoming Jurassic, Holland, 2.
  - Cycads from Black Hills, Wieland, 10.
  - Dinosaur beds of the Grand River Valley, Riggs, 1.
  - Dinosaur from upper Jurassic, Osborn, 16.
  - Discovery of teeth in Baptanodon, Gilmore, 1.
  - Foliage of Cycadella, Wieland, 9.
  - Fore limb and manus of Brontosaurus, Hatcher, 8.
  - Fossil wood from the Newark formation, Knowlton, 3.
  - Fossil footprints of the Juratrias, Lull, 2.
  - Fossils and age of Yakutat formation, Ulrich, 4.
  - Jura-fossilien aus Alaska, Pompeckj, 1.
  - Jurassic dinosaur deposits near Canyon City, Hatcher, 6.
  - Jurassic dinosaurs, Gratacap, 5.
  - Jurassic flora of Douglas County, Oregon, Fontaine, 1.
  - Jurassic fossils from Durango, Mexico, Johnson (D. W.), 3.
  - Jurassic fossils from East Greenland, Madsen, 1.
  - Morrison formation, Lee (W. T.), 1.
  - New genus and species from Jurassic of Colorado, Hay, 8.
  - New sauropod dinosaur from Jurassic of Colorado, Hatcher, 18.
  - Origin of North American Unionidæ, White (C. A.), 1.
  - Osteology of Baptanodon, Gilmore, 3.
  - Osteology of Haplocanthosaurus, Hatcher, 14.
  - Paleontology of the Malone Jurassic formation, Cragin, 2.
  - Report on collections from plant-bearing beds in the Jurassic, Fontaine, 2.
  - Status of Mesozoic floras, Ward (L. F.), 5.
- *Ordovician.*
  - Annual report of geological section of Ottawa Field-Naturalists' Club, Ami, 25.
  - Calciferous formation of Mohawk Valley, Cleland, 3.
  - Canadian Endoceratidæ, Whiteaves, 19.
  - Canadian species of Trocholites, Whiteaves, 13.
  - Cincinnati geanticline, Foerste, 10.
  - Cleiocrinus, Springer, 3.

Paleontology—Continued.
Ordovician—Continued.
Columbia folio, Tennessee, Hayes and Ulrich, 1.
Crown Point section, Raymond (P. E.), 1.
Fauna of Magnesian series, Sardeson, 2.
Fauna of the Chazy limestone, Raymond (P. E.), 7.
Fauna of the Chazy limestone on Valcour Island, Hudson, 1.
Faunas of the Trenton, Raymond (P. E.), 2.
Fort Cassin beds in the Calciferous limestone, Dwight, 1.
Fossils in the Saint Peter sandstone, Sardeson, 7.
Geological notes, Grant (C. C.), 7.
Geology of Cincinnati, Nickles, 3.
Geology of Howard County, Iowa, Calvin, 10.
Geology of west shore of Lake Winnipeg, Dowling, 1.
Graptolites of New York, Ruedemann, 8.
Harris collection of invertebrate fossils, Schuchert, 3.
Hudson River beds near Albany, Ruedemann, 1.
Isochilinæ from Canada, Jones (T. R.), 2.
List of fossils from New Brunswick, Ami, 46.
Lists of fossils from formations along Ottawa River, Ami, 21.
Lists of fossils from Perth sheet, Ami, 49.
Lists of organic remains of Ottawa district, Ami, 20.
Lower Silurian fauna of Minnesota, Sardeson, 9.
Morphogenesis of Platystrophia, Cumings, 8.
New bryozoan Homotrypa bassleri, Nickles, 4.
New species of Matheria, Whiteaves, 8.
Nileus vigilans from Elgin, Iowa, Finch (G. E.), 2.
Ordovician at Vevay, Indiana, Cumings, 3.
Ordovician rocks of Kentucky and their bryozoa, Nickles, 6.
Ordovician rocks of southern Indiana, Cumings, 4.
Ordovician section near Bellefonte, Pa., Collie, 3.
Paleozoic Cypridina from Canada, Jones (T. R.), 3.
Paleozoic faunas, Weller, 6.
Paleozoic rocks of northwestern New Jersey, Van Ingen, 3.
Quantitative study of variation in the fossil brachiopod Platystrophia lynx, Cumings and Mauck, 1.

Paleontology—Continued.
Ordovician—Continued.
Revision of bryozoan genera Dekayia, Dekayella, and Heterotrypa of the Cincinnati group, Cumings, 7.
Richmond group and its subdivisions, Nickles, 5.
St. Peter sandstone, Sardeson, 1.
Silurian and Devonian limestones of western Tennessee, Foerste, 7.
Sponges of Chazy formation, Seely, 3.
Stromatoceria of Isle La Motte, Seely, 5.
Structural features of Homotrypa, Bassler, 1.
Subdivisions of the Ordovician of Indiana, Foerste, 9.
Trenton conglomerate of Rysedorph hill, Ruedemann, 2.
Trilobites of Chazy limestone, Raymond (P. E.), 5.
Quaternary.
Arthritis in the Lansing man, Parker, 1.
Canadian fossil insects, Scudder, 1.
Canidæ of California, Merriam (J. C.), 7.
Crania of Trenton, New Jersey, Hrdlička, 1.
Discovery of a musk ox skull, Hatcher, 12.
Discovery of the Lansing skeleton, Concannon, 1.
Euceratherium, a new ungulate from the Quaternary caves of California, Sinclair and Furlong, 1.
Excavations in a Quaternary cave in Shasta County, Furlong, 1.
Exploration of Potter Creek cave, Shasta County, Cal., Sinclair, 2.
Fossil form of Orohelix yavapai Pilsbry, Cockerell, 2.
Fossil land shells of old forest bed of Ohio River, Billups, 1.
Fossil man of Lansing, Kans., Pearson (K.), 1.
Fossil nut pine, Knowlton, 9.
Fossil Unio from Wisconsin, Wagner, 2.
Geologic relations of the human relics of Lansing, Kans., Chamberlin (T. C.), 5.
Geology of Pottawattamie County, Iowa, Udden, 3.
Geology of the Philippine Islands, Becker, 1.
Glyptodont from Texas Pleistocene, Osborn, 17.
Ground sloth from Nebraska Pleistocene, Brown (B.), 1.
Helicina occulta Say, Shimek, 8.
Hyoid bone in Mastodon americanus, Holland, 3.
Lists of organic remains of Ottawa district, Ami, 20.
Loess of Iowa City, Shimek, 2.
Loess of Natchez, Shimek, 4.

- **Paleontology**—Continued.
  - *Quaternary*—Continued.
    - Mammalia from Quaternary caves of California, Sinclair, 7.
    - Marine Pliocene and Pleistocene of California, Arnold, 2.
    - Marine Pliocene and Pleistocene stratigraphy of coast of southern California, Arnold (D. and R.), 1.
    - Mastodons of New York, Clarke (J. M.), 15.
    - New Californian Bittium, Dall and Bartsch, 1.
    - North American elephantids, Lucas (F. A.), 12.
    - Observations paléontologiques dans l'Alaska, Gaudry, 1.
    - Paleontology of Bartholomew County, Indiana, mammalian fossils, Edwards (J. J.), 1.
    - Physical geography, etc., of Essex County, Mass., Sears, 1.
    - Platygonus compressus Le Conte, Wagner, 1.
    - Pleistocene fauna from Hay Springs, Nebraska, Matthew (W. D.), 8.
    - Pleistocene foraminifera from Panama, Cushman, 2.
    - Pleistocene fauna of Sankaty Head, Cushman, 3.
    - Pleistocene formations of Sankaty Head, Nantucket, Wilson (J. H.), 1.
    - Pleistocene mollusks of White Pond, Baker, 1.
    - Post-Glacial origin and migrations of life of northeastern United States, Adams (C. C.), 2.
    - Post-Pliocene fossils of the Niagara River gravels, Letson, 1.
    - Potter Creek cave, Sinclair, 5.
    - Preptoceras, a new ungulate, Furlong, 2.
    - Sea beaches of eastern Ontario, Coleman, 5.
    - Search for mammoth and other fossil remains, Maddren, 1.
    - Semifossil shells of Posey County, Ind., Daniels, 1.
    - Shaw mastodon, Hayes (S.), 1.
    - Valley loess and fossil man of Lansing, Upham, 14.
    - Work of prehistoric scolytid, Hopkins (A. D.), 1.
  - *Silurian.*
    - Ammonoosuc district of New Hampshire, Hitchcock (C. H.), 6.
    - Cincinnati geanticline, Foerste, 10.
    - Columbia folio, Tennessee, Hayes and Ulrich, 1.
    - Cobleskill limestone of New York, Hartnagel, 1.
    - Contributions to Indiana paleontology, Greene, 1, 3, 6, 14.
    - Crotalocrinus cora (Hall), Weller, 5.
    - Description of Dalmanites lunatus, Lambert, 1.

- **Paleontology**—Continued.
  - *Silurian*—Continued.
    - Echinodermata of the Missouri Silurian, Rowley, 3.
    - Eurypterid fauna from the Salina, Sarle, 2.
    - Fossils from the Silurian rocks of Ekwan River, Whiteaves, 17.
    - Genus Trimerella, with descriptions of species from Silurian rocks of Keewatin, Whiteaves, 3.
    - Geological notes, Grant (C. C.), 6, 7.
    - Geology and paleontology of Niagara Falls, Grabau, 1.
    - Geology of Onondaga County, N. Y., Schneider, 1.
    - Geology of west shore of Lake Winnipeg, Dowling, 1.
    - Graptolite (Levis) facies of Beekmantown formation in Rensselaer County, N. Y., Ruedemann, 3.
    - Growth and development of Goniograptus thureaui McCoy, Ruedemann, 4.
    - Guelph fauna of New York, Clarke and Ruedemann, 1.
    - Indigene and alien faunas of New York Devonic, Clarke (J. M.), 10.
    - Manlius formation of New York, Schuchert, 4.
    - Map of Canandaigua and Naples quadrangles, Clarke and Luther, 1.
    - New fossils from Corniferous, Hamilton and Medina shales, Herzer, 5.
    - New genus of Paleozoic brachiopods, Eunoa, Clarke (J. M.), 8.
    - New species of algæ, White (D.), 1.
    - Notes on Paleozoic crustaceans, Clarke (J. M.), 12.
    - Notes on past collecting season, Grant (C. C.), 9.
    - Notes on the late collecting season, Grant (C. C.), 10.
    - Observations on Halysites, Whitfield, 7.
    - Opening address, geologic section, Grant (C. C.) 1, 4.
    - Organic remains from Messenger Brook, Ami, 47.
    - Paleontology of the Niagara of northern Indiana, Kindle and Breger, 1.
    - Paleozoic faunas, Weller, 6.
    - Report of State paleontologist, Clarke (J. M.), 5.
    - Revision of New York Helderbergian crinoids, Talbot, 2.
    - Rocks of Rondout, Van Ingen and Clark, 1.
    - Rugose corals from the Silurian rocks of Manitoba, Whiteaves, 14.
    - Silurian and Devonian limestones, Foerste, 1.
    - Silurian and Devonian limestones of western Tennessee, Foerste, 7.
    - Siluric and Devonic Cystidea and Camarocrinus, Schuchert, 11.
    - Siluric fauna near Batesville, Ark., Van Ingen, 2.

Paleontology—Continued.
- *Silurian*—Continued.
  - Stratigraphic value of Portage sandstones, Luther, 1.
  - Stratigraphy and paleontology of the Niagara of northern Indiana, Schuchert, 10.
  - Stratigraphy of Becraft Mountain, Grabau, 9.
  - Trilobite (Dalmanites lunatus) from Littleton, Lambert, 2.
- *Tertiary.*
  - Addition to coral fauna of the Aquia Eocene formation of Maryland, Vaughan, 14.
  - American Eocene primates, Osborn, 11.
  - Arcas of the California Neocene, Osmont, 2.
  - Armadillo from middle Eocene, Osborn, 30.
  - Canidæ of California, Merriam (J. C.), 7.
  - Chalcedony-lime nuts from Bad Lands, Barbour (E. H.), 2.
  - Clavilithes from the Texas Eocene, Johnson and Grabau, 1.
  - Comparison of fossil diatoms, Elmore, 1.
  - Conrad collection of Vicksburg fossils, Casey, 4.
  - Corrections to nomenclature of Eocene corals, Vaughan, 16.
  - Correlation des horizons de mammifères tertiaires en Europe et en Amérique, Osborn, 5.
  - Cranial elements and dentitions of Titanotherium, Hatcher, 4.
  - Cretaceous and Tertiary plants of Canada, Penhallow, 4.
  - Cretaceous and Tertiary section in Montana, Douglass, 3.
  - Dall's Tertiary fauna of Florida, Schuchert, 12.
  - Description of two new Tertiary fossils, Johnson (C. W.), 1.
  - Discovery of Torrejon mammals in Montana, Douglass, 6.
  - Dryptosaurus incrassatus, Lambe, 8.
  - Earliest Tertiary coral reefs in Antilles and United States, Vaughan, 10.
  - Eocene Arthropoda, Ulrich, 1.
  - Eocene Bryozoa, Ulrich, 2.
  - Eocene Cœlenterata, Vaughan, 1.
  - Eocene deposits of Maryland, Clark and Martin, 1.
  - Eocene Echinodermata, Clark and Martin, 4.
  - Eocene Insectivora, Matthew (W. D.), 23.
  - Eocene Mammalia in Marsh collection, Wortman, 2-6, 8-16.
  - Eocene Mollusca, Clark and Martin, 2.
  - Eocene Molluscoidea (Brachiopoda), Clark and Martin, 3.
  - Eocene Pisces, Eastman, 1.
  - Eocene Plantæ, Hollick, 3.
  - Eocene Protozoa, Bagg, 1.

Paleontology—Continued.
- *Tertiary*—Continued.
  - Eocene Reptilia, Case, 1.
  - Eocene Turbinella, Dall, 12.
  - Eocene whales, Lucas (F. A.), 22.
  - Extinct tortoises, Hay, 14.
  - Fasciolaria from the Eocene green marls at Shark River, N. J., Whitfield, 13.
  - First discovery of fossil seals in America, True (F. W.), 2.
  - Fauna of Titanotherium beds, Matthew (W. D.), 9.
  - Flightless auk, Mancalla californiensis, Lucas (F. A.), 5.
  - Foraminifera from Santa Barbara, Bagg, 7.
  - Foraminifera of Trinidad, Guppy, 4.
  - Fossil corals from the elevated reefs of Curaçao, Arube, and Bonaire, Vaughan, 2.
  - Fossil crabs of the Gay Head Miocene, Cushman, 6.
  - Fossil flora of John Day basin, Oregon, Knowlton, 14.
  - Fossil floras of the Yukon, Knowlton, 17.
  - Fossil fruits of Tertiary lignite of Brandon, Perkins, 13.
  - Fossil horses of the Oligocene, Lambe, 16.
  - Fossil land shells of the John Day basin, Stearns (R. E. C.), 1.
  - Fossil Mammalia of White River beds, Douglass, 4.
  - Fossil mammals of Tertiary of northeastern Colorado, Matthew (W. D.), 2.
  - Fossil nut pine from Idaho, Knowlton, 4.
  - Fossil plants from British Columbia and the Northwest territories, Penhallow and Ami, 1.
  - Fossil plants from State of Washington, Knowlton, 8.
  - Fossil plants from vicinity of Porcupine Butte, Montana, Knowlton, 12.
  - Fossil sea lion from Miocene, True, 1.
  - Fossil shells of John Day region, Stearns (R. E. C.), 3.
  - Fossil turtles from Oregon, Hay, 9.
  - Fossil turtles of the Bridger Basin, Hay, 22.
  - Fossils from Sankaty Head, Cushman, 5.
  - Fossils of the Bahama Islands, Dall, 15.
  - Frog shells and tritons, Dall, 13.
  - Genera, subgenera, and sections of Pyramidellidæ, Dall and Bartsch, 2.
  - Geological and physical development of Anguilla, St. Martin, St. Bartholomew, and Sombrero, Spencer (J. W.), 3.
  - Geology of the John Day Basin, Merriam (J. C.), 1.
  - Gigantic fossil Lucina, Dall, 3.
  - Gigantic mammal from Loup Fork beds, Peterson, 4.

Paleontology—Continued.
  Tertiary—Continued.
    Hedgehog from American Oligocene, Matthew (W. D.), 10.
    Hyopsodidæ of Wasatch and Wind River basins, Loomis, 7.
    Jackson outcrops on Red River, Casey, 1.
    Klamath Mountain section, Diller, 12.
    Komuto shell bed, Guppy, 6.
    Locality of type of Prionastræa vaughani, Gregory, Vaughan, 7.
    Mammals from Oligocene of South Dakota, Matthew (W. D.), 22.
    Marine Pliocene and Pleistocene of California, Arnold, 2.
    Marine Pliocene and Pleistocene stratigraphy of coast of southern California, Arnold (D. and R.), 1.
    Miocene barnacles from Gay Head, Cushman, 4.
    Miocene deposits of Maryland, Shattuck, 10.
    Miocene fauna in California, Merriam (J. C.), 10.
    Miocene foraminifera from the Monterey shale, Bagg, 9.
    Miocene mammals of South Dakota, Mattnew and Gidley, 1.
    Miocene rhinoceroses, Osborn, 34.
    Mount Diablo Range of California, Anderson (F. M.), 7.
    Mylagaulodon from upper John Day of Oregon, Sinclair, 3.
    Neocene lake beds of Montana, Douglass, 1.
    Neozoic invertebrate fossils, Dall, 10.
    New American species of Amphicyon, Wortman, 1.
    New Canidæ from Miocene of Colorado, Matthew (W. D.), 5.
    New Conus from Tertiary of Florida, Aldrich, 3.
    New fossil cyprinoid, Leuciscus turneri, Lucas (F. A.), 4.
    New fossil tapir in Oregon, Sinclair, 1.
    New genus of Eocene Eulimidæ, Casey, 3.
    New Lyropecten, Dall, 4.
    New Miocene artiodactyl, Barbour (E. H.), 11.
    New Oligocene camels, Matthew (W. D.), 15.
    New rhinoceros, Trigonias osborni, Lucas (F. A.), 1.
    New sabre tooth from California, Merriam (J. C.), 16.
    New species of Eocene fossils, Aldrich, 4.
    New species of Hyracodon, Lambe, 17.
    New species of Merycochœrus, Douglass, 2.
    New species of Pleurotoma from the Pliocene of California, Raymond (W. J.), 2.
    New species of Tertiary fossils, Aldrich, 2.
    New three-toed horse, Gidley, 2.

Paleontology—Continued.
  Tertiary—Continued.
    North American species of the genus Equus, Gidley, 1.
    Notes on the Pleurotomidæ, Casey, 5.
    Oligocene Canidæ, Hatcher, 10.
    Oligocene horses, Osborn, 31.
    Oligocene of western Europe and southern United States, Maury, 1.
    Oligocene titanotheres, Osborn, 9.
    Origin of North American Unionidæ, White (C. A.), 1.
    Origin of Oligocene and Miocene deposits of Great Plains, Hatcher, 11.
    Osteology of Oxydactylus, Peterson, 1.
    Osteology of Sinopa, Matthew (W. D.), 20.
    Oyster from Eocene of Alabama, Aldrich, 5.
    Paleontology of Martinez group, Weaver, 1.
    Paleontology of the Maryland Miocene deposits, Angiospermæ, Hollick, 10.
    Paleontology of the Maryland Miocene deposits, Anthozoa, Vaughan, 19.
    Paleontology of the Maryland Miocene deposits, Brachiopoda, Martin (G. C.), 6.
    Paleontology of the Maryland Miocene deposits, Bryozoa, Ulrich and Bassler, 4.
    Paleontology of the Maryland Miocene deposits, Echinodermata, Clark (W. B.), 7.
    Paleontology of the Maryland Miocene deposits, Foraminifera, Bagg, 6.
    Paleontology of the Maryland Miocene deposits, Hydrozoa, Ulrich, 6.
    Paleontology of the Maryland Miocene deposits, Mammalia, Aves, Reptilia, Case, 9.
    Paleontology of the Maryland Miocene deposits, Malacostraca and Cirrepedia, Martin (G. C.), 4.
    Paleontology of the Maryland Miocene deposits, Mollusca, except Pelecypoda, Martin (G. C.), 5.
    Paleontology of the Maryland Miocene deposits, Ostracoda, Ulrich and Bassler, 3.
    Paleontology of the Maryland Miocene deposits, Pelecypoda, Glenn, 6.
    Paleontology of the Maryland Miocene deposits, Pisces, Eastman, 18.
    Paleontology of the Maryland Miocene deposits, Radiolaria, Martin (G. C.), 8.
    Paleontology of the Maryland Miocene deposits, Thallophyta - Diatomaceæ, Boyer, 1.
    Paleontology of the Maryland Miocene deposits, Vermes, Martin (G. C.), 7.
    Pelvic girdle of Zeuglodon Basilosaurus cetoides (Owen), Lucas (F. A.), 2.
    Phylogeny of Fusus, Grabau, 16.
    Platygonus from Texas Pliocene, Gidley, 3.

Paleontology—Continued.
Tertiary—Continued.
Pleistocene and Pliocene fossil shells, Rivers, 1.
Proper generic names of Miocene horses, Gidley, 5.
Recent zoopaleontology, Osborn, 22.
Redescription of the coral Platytrochus speciosus, Vaughan, 15.
Relations of Maryland Miocene, Dall, 14.
Report on the Clarno flora, Knowlton, 1.
Report on the flora of the Mascall formation, Knowlton, 2.
Reptiles from the Titanothere beds, Loomis, 5.
Restoration of Megacerops, Lull, 6.
Rodent from Colorado Miocene, Matthew (W. D.), 6.
Rodents and ungulates from the John Day series, Sinclair, 6.
Shell Bluff, one of Lyell's original localities, Vaughan, 4.
Skeleton of Merycodus, Matthew (W. D.), 14.
Skeleton of Titanotherium dispar Marsh, Hatcher, 7.
Skull of Bunælurus, Matthew (W. D.), 4.
Skull of Dinocyon from Miocene of Texas, Matthew (W. D.), 3.
Skulls of Trionychidæ in Bridger deposits of Wyoming, Hay, 16.
Snails of the genus Physa found at Las Vegas, Springer (A.), 1.
Studies of Gastropoda, Grabau, 11.
Successors of certain North American primates, Wortman, 7.
Ten years' progress in mammalian paleontology of North America, Osborn, 49.
Tertiary fauna at Kap Dalton, Ravn, 1.
Tertiary fauna from Chappaquiddick Island, Brown (T. C.), 1.
Tertiary fauna of Florida, Dall, 8.
Tertiary of Montana, Douglass, 9.
Tertiary plants from Canada and the United States, Penhallow, 6.
Texas oil well fossil, Aldrich, 1.
Tobagan fossils, Guppy, 7.
Tooth-structure of Mesohippus westoni (Cope), Lambe, 14.
Tortoise from Colorado Miocene, Hay, 17.
Triassic ichthyosaurs from California and Nevada, Osborn, 15.
Trionychid, Conchochelys, admirabilis, from the Puerco beds, Hay, 25.
Types of Maryland Tertiary Mollusca in British Museum, Newton, 1.
Vertebrates from the Montana Tertiary, Douglass, 8.
Triassic.
American Labyrinthodontidæ, Branson, 2.

Paleontology—Continued.
Triassic—Continued.
Atlantosaur and Titanotherium beds of Wyoming, Peck, 4.
Border line between the Paleozoic and Mesozoic, Smith (J. P.), 1.
Cestraciont spine from Triassic of Idaho, Evans (H. M.), 1.
Collection of Triassic fishes at Yale, Eaton, 1.
Faune marine du Trias Supérieur de Zacatecas, Burckhardt and Scalia, 1.
Footprint from Connecticut Valley, Cushman, 1.
Footprints of Stegomus longipes, Lull, 3.
Fossil footprints of the Juratrias, Lull, 2.
Fossils from the Red Beds, Gould, 1.
Fossils, possibly Triassic, in bowlder clay of Kings County, Haycock, 2.
Ichthyosaurian limb from Triassic of Nevada, Merriam (J. C.), 14.
Ichthyosauria from Triassic of California, Merriam (J. C.), 6.
Marine reptiles, Merriam (J. C.), 12.
Marine Trias of western America, Smith (J. P.), 5.
Nature's hieroglyphics, Lull, 4.
New batrachian and reptile from Arizona, Lucas (F. A.), 19.
New reptile from Triassic of Connecticut Valley, Emerson and Loomis, 1.
New reptiles from Trias of Wyoming, Williston, 23.
Origin of North American Unionidæ, White (C. A.), 1.
Primitive characters of the Triassic Ichthyosaurus, Merriam (J. C.), 9.
Recent literature on Triassic Ichthyosauria, Merriam (J. C.), 8.
Reptile from Triassic of California, Merriam (J. C.), 11.
Status of Mesozoic floras, Ward (L. F.), 5.
Thalattosauria, Merriam (J. C.), 15.
Triassic cephalopod genera, Hyatt and Smith, 1.
Triassic fishes of New Jersey, Eastman, 20.
Triassic Ichthyopterygia from California and Nevada, Merriam (J. C.), 4.
Triassic ichthyosaurs from California and Nevada, Osborn, 15.
Triassic Reptilia from northern California, Merriam (J. C.), 5.
Types of limb structure in Triassic Ichthyosauria, Merriam (J. C.), 13.
Vertebrates from the Trias of Arizona, Lucas (F. A.), 6.
Invertebrate.
Acidaspis from Marcellus shale, Hitchcock (C. H.), 4.
Acrothyra, a new genus of Etcheminian brachiopods, Matthew (G. F.), 12.
Acrothyra and Hyolithes, a comparison, Matthew (G. F.), 7.

Paleontology—Continued.
Invertebrate—Continued.
Addition to coral fauna of the Aquia Eocene formation of Maryland, Vaughan, 14.
Ammonoosuc district of New Hampshire, Hitchcock (C. H.), 6.
Amnigenia as an indicator of fresh-water deposits, Clarke (J. M.), 4.
Amphion, Harpina, and Platymetopus, Raymond (P. E.), 6.
Antiquity of the zoanthid actinians, Duerden, 10.
Arcas of the California Neocene, Osmont, 2.
Arizona diatomite, Blake (W. P.), 9.
Beinbau der Trilobiten, Jaekel, 1.
Brachiopoda of the Arnheim and Waynesville beds, Foerste, 13.
Burrow origin of Arthrophycus and Dædalus, Sarle, 4.
Bythotrephis from the Yukon district, Ami, 48.
Calciferous formation of Mohawk Valley, Cleland, 3.
Cambrian Brachiopoda, Walcott, 1, 6, 12.
Cambrian deposits of North Attleboro, Gorham, 1.
Cambrian Brachiopoda and Mollusca of Mount Stephen, Matthew (G. F.), 19.
Cambrian faunas, Protolenus, Matthew (G. F.), 27.
Cambrian fossils from Cape Breton, Matthew (G. F.), 9.
Cambrian fossils of St. Francois County, Beecher, 2.
Cambrian of Cape Breton, with descriptions of new species, Matthew (G. F.), 12.
Cambrian Ostracoda from northeastern America, Jones (T. R.), 1.
Cambrian rocks and fossils of Cape Breton, Matthew (G. F.), 14.
Cambrian rocks in eastern Canada, Matthew (G. F.), 29.
Cambrian rocks of Cape Breton, Matthew (G. F.), 20.
Canadian Endoceratidæ, Whiteaves, 19.
Canadian fossils insects, Scudder, 1.
Canadian species of Trochoilites, Whiteaves, 13.
Canadian specimens of Lituites, Whiteaves, 10.
Carboniferous ammonoids of America, Smith (J. P.), 3.
Carboniferous formations and faunas of Colorado, Girty, 3.
Carboniferous fossils of Bisbee quadrangle, Girty, 6.
Carboniferous invertebrates, Beede, 1.
Carboniferous rocks of Kansas section, Adams, Girty, and White, 1.
Carboniferous terrestrial arthropod fauna of Illinois, Melander, 1.
Cardioceras from the Crows Nest coal fields, Whiteaves, 9.

Paleontology—Continued.
Invertebrate—Continued.
Catalogue of type specimens of fossil invertebrates in National Museum, Schuchert and others, 1.
Catalogue of type specimens of Paleozoic fossils in New York State Museum, Clarke and Ruedemann, 1.
Changes in nomenclature of West Indian corals, Vaughan, 13.
Chondrodonta, Stanton, 2.
Cincinnati geanticline, Foerste, 10.
Clavilithes from the Texas Eocene, Johnson and Grabau, 1.
Cleiocrinus, Springer, 3.
Coal Measures Bryozoa of Nebraska, Condra, 2.
Coal Measures faunal studies, Beede and Rogers, 1.
Coal Measures faunal studies, Beede, 6.
Coal resources of Wyoming, Trumbull, 1.
Columbia folio, Tennessee, Hayes and Ulrich, 1.
Conrad collection of Vicksburg fossils, Casey, 4.
Contributions to Devonian paleontology, Williams and Kindle, 1.
Contribution to Indiana paleontology, Greene, 1–15.
Corals of Buda limestone, Vaughan, 17.
Corniferous fauna in Appalachian province in North America, Weller, 4.
Corrections to nomenclature of Eocene fossil corals, Vaughan, 16.
Correlation of geological faunas, Williams (H. S.), 5.
Cretaceous formations and faunas of New Jersey, Weller, 7.
Cretaceous fossils from the John Day basin, Stanton, 1.
Cretaceous fossils of the Bisbee quadrangle, Stanton, 6.
Crinoid and mollusk from the Portage rocks of New York, Whitfield, 11.
Crinoid genera Sagenocrinus, Forbesiocrinus, and allied forms, Springer (F.), 2.
Crotalocrinus cora (Hall), Weller, 5.
Crustacea of the Cretaceous formation of New Jersey, Pilsbry, 1.
Cyclus from Coal Measures, Rogers, 3.
Dall's Tertiary fauna of Florida, Schuchert, 12.
Decapoden-Gattungen Linuparus und Podocrates, Ortmann, 2.
Deceptive fossilization of certain pelecypod species, Sardeson, 10.
Deposition of the loess, Owen, 5.
Description of Dalmanites lunatus, Lambert, 1.
Description of two new Tertiary fossils, Johnson (C. W.), 1.
Development and morphology of Fenestella, Cumings, 11.
Development and relationships of the Rugosa, Duerden, 11.

Paleontology—Continued.
Invertebrate—Continued.
Development of Fenestella, Cumings, 10.
Development in size of the inarticulate brachiopods of the basal Cambrian, Matthew (G. F.), 17.
Development of biserial arm in certain crinoids, Grabau, 8.
Development of Scaphites, Smith (W. D.), 1.
Development of septa in Paleozoic corals, Duerden, 5.
Development of some Paleozoic bryozoa, Cumings, 9.
Developmental changes in Devonian brachiopods, Raymond (P. E.), 3.
Developmental stages of Orthothetes minutus, Cumings, 5.
Devonian era in Ohio basin, Claypole, 5.
Devonian fauna of Kwataboahegan, Parks, 5.
Devonian fossils of Bisbee quadrangle, Williams (H. S.), 6.
Devonian paleontology, Schuchert, 13.
Devonic crinoids, Wood (Elvira), 3.
Devonic worms, Clarke (J. M.), 18.
Diatom-earth in Arizona, Blake (W. P.), 10.
Did the upper Etcheminian fauna invade eastern Canada from the southeast? Matthew (G. F.), 18.
Distribution and syonymy of Ptychospira sexplicata, Greger, 1.
Drift fossils, Hollick, 8.
Dwarf fauna of Tully limestone, Loomis, 4.
Earliest Tertiary coral reefs in Antilles and United States, Vaughan, 10.
Early stages of some Paleozoic corals, Gordon (C. E.), 1.
Echinodermata of the Missouri Silurian, Rowley, 3.
Eocene Arthropoda, Ulrich, 1.
Eocene Bryozoa, Ulrich, 2.
Eocene Coelenterata, Vaughan, 1.
Eocene Echinodermata, Clark and Martin, 4.
Eocene Mollusca, Clark and Martin, 2.
Eocene Molluscoidea (Brachiopoda), Clark and Martin, 3.
Eocene Pisces, Eastman, 1.
Eocene Protozoa, Bagg, 1.
Eocene Turbinella, Dall, 12.
Eurypterid fauna from the Salina, Sarle, 2.
Eurypterid remains in the Cambrian of Missouri, Beecher, 3.
Evolution of some Devonic spirifers, Grabau, 18.
Fasciolaria from the Eocene green marls at Shark River, N. J., Whitfield, 13.
Fauna of Cliffwood clays, Weller, 10, 13.
Fauna of magnesian series, Sardeson, 2.

Paleontology—Continued.
Invertebrate—Continued.
Fauna of Stafford limestone of New York, Talbot, 1.
Fauna of the Agoniatite limestone of Onondaga County, N. Y., Wilson (J. D.), 1.
Fauna of the Chazy limestone on Valcour Island, Hudson, 1.
Fauna of the Chazy limestone, Raymond (P. E.), 7.
Fauna of the Mentor, Jones (A. W.), 2.
Fauna of the Permian, Beede, 2.
Faune marine du Trias Supérieur de Zacatecas, Burckhardt and Scalia, 1.
Foraminifera from Santa Barbara, Bagg, 7.
Foraminifera of Trinidad, Guppy, 4.
Fort Cassin beds in the Calciferous limestone, Dwight, 1.
Fossil corals from reefs of Curacao, Arube, and Bonaire, Vaughan, 2.
Fossil Cyrena from Alberta, Whiteaves, 6.
Fossil crabs of the Gay Head Miocene, Cushman, 6.
Fossil form of Orohelix yavapai Pilsbry, Cockerell, 2.
Fossil fresh-water shells of Colorado Desert, Stearns (R. E. C.), 2.
Fossil insects in Permian of Kansas, Sellards, 7.
Fossil land shells of Bermuda, Gulick, 1.
Fossil land shells of old forest bed of Ohio River, Billups, 1.
Fossil land shells of the John Day region, Stearns (R. E. C.), 1.
Fossil shells of the John Day region, Stearns (R. E. C.), 3.
Fossil Unio from Wisconsin, Wagner, 2.
Fossils and age of Yakutat formation, Ulrich, 4.
Fossils from Mount Noyes (Canadian Rockies), Woodward (H.), 2.
Fossils from Sankaty Head, Cushman, 5.
Fossils from Subcarboniferous rocks of northeastern Missouri, Rowley, 2.
Fossils from the Hackberry group of Iowa, Webster, 2.
Fossils from the Silurian rocks of Ekwan River, Whiteaves, 17.
Fossils from the upper Paleozoic rocks of Missouri, Rowley, 1.
Fossils from the Vancouver Cretaceous, Whiteaves, 12.
Fossils in the St. Peter sandstone, Sardeson, 6.
Fossils of the Bahama Islands, Dall, 15.
Fossils of the Bahamas, Dall, 16.
Fossils of the Texas Cretaceous, Prather, 1.
Fossula in rugose corals, Duerden, 12.
Fresh-water molluscan faunule from Cretaceous of Montana, Stanton, 4.

Paleontology—Continued.
- *Invertebrate*—Continued.
  - Frogshells and tritons, Dall, 13.
  - Gastropod from the Hackberry group of Iowa, Webster, 1.
  - Genera and species of Canadian Paleozoic corals, Lambe, 2.
  - Genera, subgenera, and sections of Pyramidellidæ, Dall and Bartsch, 2.
  - Genus Panenka, with description of a new species from Devonian rocks of Ontario, Whiteaves, 4.
  - Genus Rhynchopora, Greger, 2.
  - Genus Trimerella, with descriptions of species from Silurian rocks of Keewatin, Whiteaves, 3.
  - Geology and paleontology of the Judith River beds, Stanton and Hatcher, 1.
  - Geology of Cerrillos Hills, Johnson (D. W.), 5.
  - Geology of Howard County, Iowa, Calvin, 10.
  - Geology of Onondaga County, N. Y., Schneider, 1.
  - Gigantic fossil Lucina, Dall, 3.
  - Graptolites of New York, Ruedemann, 8.
  - Growth and development of Goniograptus thureaui McCoy, Ruedemann, 4.
  - Guelph fauna of New York, Clarke and Ruedemann, 1.
  - Hamilton formation in central New York, Cleland, 2.
  - Hamilton fossils from Bethany, N. Y., Monroe, 1.
  - Hamilton group of Thedford, Ontario, Shimer and Grabau, 1.
  - Harris collection of invertebrate fossils, Schuchert, 3.
  - Helderbergian fossils near Montreal, Schuchert, 1.
  - Helicina occulta Say, Shimek, 8.
  - Helicoceras stevensoni, Whitfield, 1.
  - Heteroceras simplicostatum, Whitfield, 3.
  - Hudson River beds near Albany, Ruedemann, 1.
  - Hyolithes gracilis and related forms, Matthew (G. F.), 8.
  - Index to publications of New York State Natural History Survey, Ellis (M.), 1.
  - Indigene and alien faunas of New York Devonic, Clarke (J. M.), 10.
  - Invertebrate fossils from Carboniferous section of Kansas, Girty, 4.
  - Invertebrate paleontology of Red Beds, Beede, 8.
  - Isochilinæ from Canada, Jones (T. R.), 2.
  - Ithaca fauna of central New York, Clarke (J. M.), 27.
  - Jura-fossilien aus Alaska, Pompeckj, 1.
  - Jurassic fossils from east Greenland, Madsen, 1.
  - Kinderhook faunal studies, Weller, 2.

Paleontology—Continued.
- *Invertebrate*—Continued.
  - Kinderhook faunas, Weller, 11.
  - Komuto shell-bed, Guppy, 6.
  - Kreide-Ammoniten von Texas, Lasswitz, 1.
  - Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich, 8.
  - Limestones interbedded with shales of Marcellus stage, Clarke (J. M.), 2.
  - List of fossils from New Brunswick, Ami, 46.
  - List of fossils from Perth sheet, Ami, 48.
  - Literature on Madreporaria Fungida, Vaughan, 21.
  - Locality of type of Prionastræa vaughani Gregory, Vaughan, 7.
  - Lower Silurian fauna of Minnesota, Sardeson, 9.
  - Lyon County geology, Smith (A. J.), 2.
  - Lytoceras from the Cretaceous rocks, Whiteaves, 2.
  - Manlius formation of New York, Schuchert, 4.
  - Map of Canandaigua and Naples quadrangles, Clarke and Luther, 1.
  - Marcellus limestone, Wood (Elvira), 1.
  - Marine Pliocene and Pleistocene stratigraphy of coast of southern California, Arnold (D. and R.), 1.
  - Marine Pliocene and Pleistocene of San Pedro, Arnold, 2.
  - Marine Trias of western America, Smith (J. P.), 5.
  - Middle Cambrian fossils, Woodward (H.), 1.
  - Miocene barnacles from Gay Head, Cushman, 4.
  - Miocene deposits of Maryland, Shattuck, 10.
  - Miocene fauna in California, Merriam (J. C.), 10.
  - Miocene Foraminifera from the Monterey shale, Bagg, 9.
  - Missouri paleontology, Rowley, 4.
  - Mode of existence of Orthoceras, Ruedemann, 6.
  - Mollusca of Buda limestone, Shattuck, 8.
  - Monocraterion and Oldhamia, Matthew (G. F.), 11.
  - Morphology and development of coral polyps, Duerden, 9.
  - Morphogenesis of Platystrophia, Cumings, 8.
  - Morphology of the Madreporaria, Duerden, 4, 7, 8.
  - Morphology of the hinge teeth of bivalves, Dall, 2.
  - Morphology of the pelecypods, Ruedemann, 5.
  - Morse on living brachiopods, Schuchert, 2.
  - Mount Diablo Range of California, Anderson (F. M.), 7.

Paleontology—Continued.
Invertebrate—Continued.
Myalina from Coal Measures of Texas, Whitfield, 2.
Naples fauna in western New York, Clarke (J. M.), 19.
Neozoic invertebrate fossils, Dall, 10.
New Agelacrinites, Clarke (J. M.), 3.
New Bryozoa from Coal Measures of Nebraska, Condra, 1.
New bryozon Homotrypa bassleri, Nickles, 4.
New California Bittium, Dall and Bartsch, 1.
New Conus from Tertiary of Florida, Aldrich, 3.
New crinoid from the Hamilton, Wood (Elvira), 2.
New fossil Ashmunella, Cockerell, 1.
New fossil sponge from Coal Measures, Herzer, 3.
New fossils from Upper Carboniferous of Kansas, Beede, 4.
New genus and species of Lower Carboniferous bryozoan, Whitfield, 8.
New genus of Eocene Eulimidæ, Casey, 3.
New genus of Paleozoic brachiopods, Eunoa, Clarke (J. M.), 8.
New Lyropecten, Dall, 4.
New Molluscan genera from the Carboniferous, Girty, 5.
New species of Eocene fossils, Aldrich, 4.
New species of Matheria, Whiteaves, 8.
New species of Olenellus, Wanner, 1.
New species of Pleurotoma from the Pliocene of California, Raymond (W. J.), 2.
New species of Tertiary fossils, Aldrich, 2.
New species of Unio, Whiteaves, 1.
New Unios from the Laramie, Whitfield, 6.
Nileus vigilans from Elgin, Iowa, Finch (G. E.), 2.
Nomenclature and classification of sedimentary formations, Williams (H. S.), 8.
Notes on Paleozoic crustaceans, Clarke (J. M.), 12.
Notes on past collecting season, Grant (C. C.), 9.
Notes on the late collecting season, Grant (C. C.), 10.
Notes on the Pleurotomidæ, Casey, 5.
Noteworthy crinoid, Schuchert, 8.
Oboloid shells of the Cambrian system in Canada, Matthew (G. F.), 16.
Observations on genus Romingeria, Beecher, 9.
Observations on Halysites, Whitfield, 7.
Observations on Romingeria, Sardeson, 12.
Observations upon Dæmonelix, Peterson, 2.

Paleontology—Continued.
Invertebrate—Continued.
Oligocene of western Europe and southern United States, Maury, 1.
Ordovician at Vevay, Ind., Cumings, 3.
Ordovician rocks of Kentucky and their Bryozoa, Nickles, 6.
Ordovician section near Bellefonte, Pa., Collie, 3.
Organic remains from Messenger Brook, Ami, 47.
Origin of North American Unionidæ, White (C. A.), 1.
Ostracoda of basal Cambrian rocks in Cape Breton, Matthew (G. F.), 13.
Oyster from Eocene of Alabama, Aldrich, 5.
Paleontology and zoology, Whiteaves, 18.
Paleontology of Martinez group, Weaver, 1.
Paleontology of the Bingham mining district, Girty, 12.
Paleontology of the Boulder area, Henderson (J.), 3.
Paleontology of the Iowa Devonian, Webster, 3.
Paleontology of the Malone Jurassic formation, Cragin, 2.
Paleontology of the Maryland Miocene deposits, Anthozoa, Vaughan, 19.
Paleontology of the Maryland Miocene deposits, Brachiopoda, Martin (G. C.), 6.
Paleontology of the Maryland Miocene deposits, Bryozoa, Ulrich and Bassler, 4.
Paleontology of the Maryland Miocene deposits, Echinodermata, Clark (W. B.), 7.
Paleontology of the Maryland Miocene deposits, Foraminifera, Bagg, 6.
Paleontology of the Maryland Miocene deposits, Hydrozoa, Ulrich, 6.
Paleontology of the Maryland Miocene deposits, Malacostraca and Cirrepedia, Martin (G. C.), 4.
Paleontology of the Maryland Miocene deposits, Mollusca, except Pelecypoda, Martin (G. C.), 5.
Paleontology of the Maryland Miocene deposits, Ostracoda, Ulrich and Bassler, 3.
Paleontology of the Maryland Miocene deposits, Pelecypoda, Glenn, 6.
Paleontology of the Maryland Miocene deposits, Radiolaria, Martin (G. C.), 8.
Paleontology of the Maryland Miocene deposits, Vermes, Martin (G. C.), 7.
Paleontology of the Niagara of northern Indiana, Kindle and Breger, 1.
Paleozoic cockroaches, Sellards, 5, 8.
Paleozoic Cypridina from Canada, Jones (T. R.), 3.
Paleozoic faunas, Weller, 6.

Paleontology—Continued.
Invertebrate—Continued.
Paleozoic ostracods from Maryland, Jones (T. R.), 4.
Paraphorhynchus, Weller, 9.
Parasite from Devonian rocks of Hudson Bay, Parks, 6.
Percé: sketch of its geology, Clarke (J. M.), 26.
Periodic migrations between Asiatic and American coasts of the Pacific Ocean, Smith (J. P.), 4.
Permian Xiphosuran from Kansas, Beecher, 10.
Phylogenic stage of Cambrian Gastropoda, Sardeson, 12.
Phylogeny of Fusidæ, Grabau, 13.
Phylogeny of Fusus, Grabau, 16.
Physical geography, etc., of Essex County, Mass., Sears, 1.
Pleistocene and Pliocene fossil shells, Rivers, 1.
Pleistocene fauna of Sankaty Head, Cushman, 3.
Pleistocene foraminifera from Panama, Cushman, 2.
Pleistocene mollusks of White Pond, Baker, 1.
Portage crinoids, Clarke (J. M.), 23.
Post-Pliocene gravels of the Niagara River gravels, Letson, 1.
Pottawatomie and Douglas formations, Rogers, 1.
Prehistoric California, Yates (L. G.), 1.
Preliminary notice of Etcheminian fauna of Newfoundland, Matthew (G. F.), 1.
Problem of the Monticuliporoidea, Sardeson, 3, 4.
Prodromites, a new ammonite genus, Smith and Weller, 1.
Pseudoceratites of the Cretaceous, Hyatt, 1.
Quantitative study of variation in the fossil brachiopod Platystrophia lynx, Cumings and Mauck, 1.
Redescription of the coral Platytrochus speciosus, Vaughan, 15.
Reef structures in the Clinton and Niagara strata, Sarle, 1.
Relations of Maryland Miocene, Dall, 14.
Relationships of the Rugosa (Tetracoralla) to living Zoantheæ, Duerden, 3.
Remarkable slab of crinoids, Hovey (E. O.), 14.
Report of State geologist of Nebraska, Barbour (E. H.), 8.
Report of State paleontologist, Clarke (J. M.), 25.
Report of the director, Clarke (J. M.), 28.
Reproduction of lost parts in a fossil crinoid, Whitfield, 9.

Paleontology—Continued.
Invertebrate—Continued.
Review of recent papers on Bahaman corals, Vaughan, 5.
Revision of bryozoan genera Dekayia, Dekayella, and Heterotrypa of the Cincinnati group, Cumings, 7.
Revision of genera and species of Canadian Paleozoic corals, Lambe, 2.
Revision of New York Helderbergian crinoids, Talbot, 2.
Revision of Paleozoic Ctenostomata, Ulrich and Bassler, 1.
Revision of Paleozoic Paleechinoidea, Klem, 1.
Revision of Paleozoic Trepostomata, Ulrich and Bassler, 2.
Revision of Phyllocarida from Chemung and Waverly groups of Pennsylvania, Beecher, 8.
Revision of the Blastoideæ, Hambach, 1.
Rhizopods in Pella beds in Iowa, Udden, 6.
Rhombopora lepidodendroides, Meek, Condra, 3.
Richmond group and its subdivisions, Nickles, 5.
Rugose corals from the Silurian rocks of Manitoba, Whiteaves, 14.
Sedentary impression known as Climactichnites, Woodworth, 6.
Semifossil shells of Posey County, Ind., Daniels, 1.
Senility among gastropods, Smith (B.), 1.
Septal sequence in Paleozoic corals, Duerden, 6.
Shells of marls, Walker (B.), 1.
Shells of the marl deposits of Aroostook County, Me., Nylander, 1.
Siluric and Devonic Cystidea and Camarocrinus, Schuchert, 11.
Siluric and Devonic faunas of Trilobite Mountain, Shimer, 5.
Siluric Cystoidea, Schuchert, 6.
Siluric fauna near Batesville, Ark., Van Ingen, 2.
Snails of the genus Physa found at Las Vegas, Springer (A.), 1.
Sponges from the Hamilton group of Indiana, Whitfield, 12.
Sponges of Chazy formation, Seely, 3.
Starfish from Cretaceous of Wyoming, Weller, 8.
Star-fish from the Fort Benton, Douglass, 7.
Stony corals of the Porto Rican waters, Vaughan, 3.
Stratigraphy and paleontology of the Niagara of northern Indiana, Schuchert, 10.
Stratigraphy of Becraft Mountain, Grabau, 9.
Stromatoceria of Isle la Motte, Seely, 5.
Strophomena and the type of the genus, Miller (S. A.), 1.

Paleontology—Continued.
Invertebrate—Continued.
Structural features of Homotrypa, Bassler, 1.
Structure and affinities of Palæodiscus and Agelacrinus, Spencer (W. K.), 1.
Structure of some primitive cephalopds, Ruedemann, 9.
Studies of Gastropoda, Grabau, 1, 11.
Subdivisions of the Ordovician of Indiana, Foerste, 9.
Teredo-like shell from Laramie group, Whitfield, 4.
Tertiary fauna at Kap Dalton, Ravn, 1.
Tertiary fauna from Chappaquiddick Island, Brown (T. C.), 1.
Tertiary fauna of Florida, Dall, 8.
Texas oil well fossil, Aldrich, 1.
Time element in stratigraphy and correlation, Dall, 17.
Time element in stratigraphy and correlation, Ulrich, 9.
Tobagan fossils, Guppy, 7.
Torsion of the lamellibranch shell, Clarke (J. M.), 17.
Tracks from the Knoydart formation, Ami, 3.
Trenton conglomerate of Rysedorph Hill, Ruedemann, 2.
Triassic cephalopod genera, Hyatt and Smith, 1.
Trilobite (Dalmanites lunatus) from Littleton, Lambert, 2.
Trilobites of Chazy limestone, Raymond (P. E.), 5.
Triticites, new genus of Carboniferous foraminifers, Girty, 9.
Tropidoleptus fauna at Canandaigua Lake, Raymond (P. E.), 4.
True nature of Tamiosoma, Dall, 7.
Two Carboniferous genera, Cockerell, 3.
Type of Aviculipecten, Girty, 8.
Type of Aviculipecten, Hind, 1.
Types of invertebrate Cretaceous fossils in the collection of the Academy of Natural Science, Philadelphia, Johnson (C. W.), 2.
Types of Maryland Tertiary mollusca in British Museum, Newton, 1.
Typical species and generic characters of Aviculipecten, Girty, 7.
Ueber Pelecypoden-zonen in der Trias Nord-Amerikas, Smith (J. P.), 2.
Uintacrinus, Springer (F.), 1.
Uintacrinus and Hemiaster in the Vancouver Cretaceous, Whiteaves, 15.
Upper Permian in western Texas, Girty, 2.
Validity of Idiophyllum rotundifolium, Sellards, 4.
Variation of spiralia in Seminula argentia (Shepard) Hall, Beede, 5, 7.
Ventral integuments of trilobites, Beecher, 4, 7.
Worm burrows in Chemung of New York, Whitfield, 10.

Paleontology—Continued.
Vertebrate.
Additional remarks on Diplodocus, Hatcher, 15.
American Eocene primates, Osborn, 11.
American Labyrinthodontidæ, Branson, 2.
American Pelycosauria, Case, 6.
Ancestry of the dogs, Matthew (W. D.), 13.
Ancient American saurians, Beard, 2.
Arboreal ancestry of the Mammalia, Matthew (W. D.), 14.
Armadillo from Middle Eocene, Osborn, 30.
Arthritis in the Lansing man, Parker, 1.
Arthrodires from the Cleveland shale, Dean, 1.
Astrodon (Pleurocœlus) in the Atlantosaurus beds of Wyoming, Hatcher, 16.
Atlantosaur and Titanotherium beds of Wyoming, Peck, 4.
Bathygnathus borealis Leidy, and the Permian of Prince Edward Island, Case, 13.
Batrachian footprints, Matthew (G. F.), 22, 23, 30.
Batrachian footprints of Carboniferous system, Matthew (G. F.), 21.
Beitrag zur Kenntniss von Diplocaulus Cope, Broili, 1.
Bibliography and catalogue of fossil vertebrata, Hay, 5.
Bibliography and catalogue of fossil vertebrates, Dean, 7.
Biometric evidence in problem of paired limbs of vertebrates, Dean, 5.
Bones of a mastodon found, Gordon (R.), 1.
Bones of forearm in Opisthocœlia, Osborn, 37.
Bothriolepis, Patten, 1.
Brachiosaurus altithorax, Riggs, 6.
Campyloprion, a new form of Edestus-like dentition, Eastman, 3.
Canidæ of California, Merriam (J. C.), 7.
Carboniferous cestraciont and acanthodian sharks, Eastman, 6.
Carboniferous cochliodonts, Branson, 1.
Carboniferous fish fauna of Mazon Creek, Eastman, 4.
Carboniferous fishes from central Western States, Eastman, 10.
Ceratopsia from the Laramie, Wyoming, Hatcher, 22.
Cestraciont spine from Triassic of Idaho, Evans (H. M.), 1.
Characteristic types of American dinosaurs, Beard, 1.
Characters of Chelydosauria, Case, 15.
Characters of Mylostoma Newberry, Dean, 2.

Paleontology—Continued.
Vertebrate—Continued.
Characters of Pteranodon, Eaton, 2, 3.
Chronological distribution of the elasmobranchs, Hay, 1.
Classification of the Reptilia, Osborn, 26, 39, 41.
Collection of fossil vertebrates in American Museum of Natural History, Matthew (W. D.), 12.
Collection of Triassic fishes at Yale, Eaton, 1.
Composition of shells of turtles, Hay, 6.
Constructing an extinct monster from fossil remains, Lucas (F. A.), 13.
Correction of generic name, Peterson, 5.
Correction of Professor Osborn's note, Hatcher, 1.
Correlation des horizons de mammifères tertiaires en Europe et en Amerique, Osborn, 5.
Crania of extinct bisons from the Klondike Creek gravels, Whiteaves, 7.
Crania of Trenton, N. J., Hrdlička, 1.
Cretaceous actinopterous fishes, Hay, 10.
Cretaceous fish Portheus molossus, Osborn, 35.
Cretaceous fishes, Williston, 1.
Cretaceous turtles of New Jersey, Wieland, 6, 7, 13.
Crocodile from Wyoming, Jurassic, Holland, 2.
Cuban fossil mammals, Vaughan, 9.
Dates of publication of certain genera of fossil vertebrates, Bush (L. P.), 1.
Dental grooves and teeth in Baptanodon, Gilmore, 2.
Dentition of Rhynchodus, Eastman, 14.
Development of sharks, Dean, 8.
Devonian era in Ohio basin, Claypole, 5.
Devonian fish fauna of Iowa, Eastman, 11.
Devonian fish remains from Colorado, Eastman, 16.
Dinosaur beds of the Grand River Valley, Riggs, 1.
Dinosaur Haplocanthus Hatcher, Hatcher, 19.
Dinosaur footprints from Arizona, Riggs, 8.
Dinosaur from Upper Jurassic, Osborn, 16.
Dinosaur Trachodon annectens, Lucas (F. A.), 21.
Dinosaurian genus Creosaurus Marsh, Williston, 2.
Dinosaurs from the Cretaceous of Alberta, Lambe, 10.
Dinosaurs in Fort Pierre shales, Douglass, 5.
Dinosaurs or terrible lizards, Lucas (F. A.), 9.
Diplodocus Marsh, Hatcher, 1.
Discovery of a muskox skull, Hatcher, 12
Discovery of teeth in Baptanodon, Gilmore, 1.
Discovery of the Lansing skeleton, Concannon, 1.
Discovery of Torrejon mammals in Montana, Douglass, 6.
Distinctive characters of the mid-Cretaceous fauna, Osborn, 12.
Dolichocephaly and brachycephaly in the lower mammals, Osborn, 9.
Dryptosaurus incrassatus, Lambe, 8.
Elosaurus parvus, a new genus and species of Sauropoda, Peterson and Gilmore, 1.
Eocene Insectivora, Matthew (W. D.), 23.
Eocene Mammalia in Marsh collection, Wortman, 2–6, 8–14.
Eocene Reptilia, Case, 1.
Eocene whales, Lucas (F. A.), 22.
Euceratherium, a new ungulate from the Quaternary caves of California, Sinclair and Furlong, 1.
Evolution of fitness in ichthyosaurs, Osborn, 44.
Evolution of the camel, Matthew (W. D.), 17.
Evolution of the horse, Beasley, 1.
Evolution of the horse, Matthew (W. D.), 11.
Evolution of the horse, Osborn, 29, 52, 55,
Evolution of horse in America, Osborn, 43.
Evolution of the Proboscidea in North America, Osborn, 22.
Excavation of mastodon remains, Mackensen, 1.
Excavations in a Quaternary cave in Shasta County, Furlong, 1.
Exploration of Potter Creek cave, Shasta County, Cal., Sinclair, 2.
Extinct tortoises, Hay, 14.
Fauna of Titanotherium beds, Matthew (W. D.), 9.
Fingers of pterodactyls, Williston, 21.
First discovery of fossil seals in America, True (F. W.), 2.
Flightless auk, Mancalla californiensis, Lucas (F. A.), 5.
Footprint from Connecticut Valley, Cushman, 1.
Footprint interpretation, Lull, 8.
Footprints of Stegomus longipes, Lull, 3.
Fore and hind limbs of the Sauropoda, Osborn and Granger, 1.
Foreleg and pectoral girdle of Morosaurus, Riggs, 2.
Fore limb and manus of Brontosaurus, Hatcher, 8.
Fossil avian remains from Armissan, Eastman, 21.
Fossil bison of Kansas, McClung, 1.

Paleontology—Continued.
Vertebrate—Continued.
Fossil carnivores, marsupials, and mammals in the American Museum of Natural History, Matthew (W. D.), 19.
Fossil egg from Arizona, Morgan and Tallmon, 1.
Fossil footprints of the Juratrias, Lull, 2.
Fossil horses of the Oligocene, Lambe, 16.
Fossil Mammalia of White River beds, Douglass, 4.
Fossil mammals of Tertiary of northeastern Colorado, Matthew (W. D.), 2.
Fossil man of Lansing, Kans., Pearson (K.), 1.
Fossil man of Lansing, Kans., Williston, 18.
Fossil plumage, Eastman, 17.
Fossil porcupine from Arizona, Allen (J. A.), 1.
Fossil sea lion from Miocene, True, 1.
Fossil turtles, Hay, 13.
Fossil turtles: Amphichelydia, Hay, 23.
Fossil turtles: Toxochelyidæ, Hay, 24.
Fossil turtles of the Bridger basin, Hay, 22.
Fossil turtles from Oregon, Hay, 9.
Fossil wonders of the West, Osborn, 42.
Ganoid- und Knochen-fische aus der Kreide formation von Kansas, Loomis, 1.
Genera and species of Trachodontidæ Marsh, Hatcher, 9.
General account of fossil fishes, Eastman, 19.
Genus Baptanodon, with description of new species, Knight (W. C.), 8.
Geology and paleontology of the Judith River beds, Stanton and Hatcher, 1.
Gigantic mammal from Loup Fork beds, Peterson, 4.
Glyptodont from Texas Pleistocene, Osborn, 17.
Grasping power of manus of Ornithomimus, Lambe, 9.
Greatest flying creature, Langley, 2.
Greatest flying creature, Lucas (F. A.), 18.
Greatest flying creature, the great pterodactyl Ornithostoma, Lucas (F. A.), 10.
Ground sloth from Nebraska Pleistocene, Brown (B.), 1.
Hallopus, Baptanodon, and Atlantosaurus beds of Marsh, Williston, 25.
Historical evidence as to origin of paired limbs of vertebrates, Dean, 4.
Hedgehog from American Oligocene, Matthew (W. D.), 10.
Hind limb of Protostega, Williston, 4.
Homoplastic characters in aquatic air-breathing vertebrates, Williston, 11.

Paleontology—Continued.
Vertebrate—Continued.
Hyoid bone in Mastodon americanus, Holland, 3.
Hyopsodidæ of Wasatch and Wind River basins, Loomis, 7.
Ichthyosauria from Triassic of California, Merriam (J. C.), 6.
Ichthyosaurian limb from Triassic of Nevada, Merriam (J. C.), 14.
Identification of Meckelian and mylohyoid grooves in mammals, Bensley, 1.
Index generum mammalium, Palmer (T. S.), 1.
Interesting Cretaceous Chimæroid egg case, Gill, 2.
Jaw of Dryptosaurus, Lambe, 6.
John Day fossil beds, Merriam (J. C.), 3.
Jurassic dinosaur deposits near Canyon City, Hatcher, 6.
Jurassic dinosaurs, Gratacap, 5.
Jurassic fossils from Durango, Mexico, Johnson (D. W.), 3.
Koprolithen des Perms von Texas, Neumayer, 1.
Lansing man, Williston, 24.
Largest known dinosaur, Riggs, 3.
List of mammals of New York, Miller (G. S., jr.), 1.
Literature of Edestus, Eastman, 22.
Locality furnishing Cretaceous fishes, Hay, 12.
Mammalia from Quaternary caves of California, Sinclair, 7.
Mammals and reptiles, Rutland, 1.
Mammals from Oligocene of South Dakota, Matthew (W. D.), 22.
Mammals in the swamps of Whitman County, Sternberg, 3.
Manus, sacrum, and caudals of Sauropoda, Osborn, 32.
Marine reptiles, Merriam (J. C.), 12.
Marine turtle Archelon, Wieland, 3.
Mastodon and mammoth remains, Anderson (N. C.), 1.
Mastodons of New York, Clarke (J. M.), 15.
Meeting of Section A of the American Paleontological Society, Hay, 20.
Megacerops tyleri, Lull, 5.
Méthodes précises mises actuellement en œuvre dans l'étude des vertébrés fossiles des Etats-Unis d'Amérique, Osborn, 4.
Miocene mammals of South Dakota, Matthew and Gidley, 1.
Miocene rhinoceroses, Osborn, 34.
Missing links, Montgomery, 1.
Missourian and Permo-Carboniferous fish fauna of Kansas and Nebraska, Eastman and Barbour, 1.
Models and restorations of extinct animals, Osborn, 24.
Morphology of the skull of Dimetrodon, Case, 11.

Paleontology—Continued.

Vertebrate—Continued.

Mounted skeleton of Brontosaurus, Matthew (W. D.), 21.
Mylagaulodon from upper John Day of Oregon, Sinclair, 3.
Nature of Edestus and related forms, Eastman, 13.
Nature's hieroglyphics, Lull, 4.
Neocene lake beds of Montana, Douglass, 1.
New American species of Amphicyon, Wortman, 1.
New and little-known fossil vertebrates, Hatcher, 3.
New armed dinosaur, Williston, 26.
New batrachian and reptile from Trias of Arizona, Lucas (F. A.), 19.
New Canidæ from Miocene of Colorado, Matthew (W. D.), 5.
New dinosaur, Stegosaurus marshi, Lucas (F. A.), 2.
New fossil cyprinoid, Leuciscus turneri, Lucas (F. A.), 4.
New fossil tapir in Oregon, Sinclair, 1.
New genus and species from Jurassic of Colorado, Hay, 8.
New locality for Triassic vertebrates in Wyoming, Williston, 28.
New Miocene artiodactyl, Barbour, 11.
New Niobrara Taxochelys, Wieland, 12.
New Oligocene camels, Matthew (W. D.), 15.
New or little-known extinct reptiles, Williston, 10.
New plesiosaur, Lucas, 17.
New points on the fin attachment of Dinichthys and Cladodus, Clark (W.), 1.
New reptile from Triassic of Connecticut Valley, Emerson and Loomis, 1.
New reptiles from Trias of Wyoming, Williston, 23.
New rhinoceros, Trigonias osborni, Lucas (F. A.), 1.
New rodents and origin of Dæmonelix, Peterson, 3.
New sabre-tooth from California, Merriam (J. C.), 16.
New sauropod dinosaur from Jurassic of Colorado, Hatcher, 18.
New species of Baëna from Laramie beds of Wyoming, Hay, 2.
New species of Cladodus from the Devonian of Colorado, Hay, 4.
New species of Hyracodon, Lambe, 17.
New species of Merycochœrus in Montana, Douglass, 2.
New three-toed horse, Gidley, 2.
New turtle from the Kansas Cretaceous, Williston, 3.
New turtles from Judith River beds of Montana, Hay, 15.
New vertebrates of the mid-Cretaceous, Osborn, 13.
New Xiphosuran from upper Devonian of Pennsylvania, Beecher, 5.

Paleontology—Continued.

Vertebrate—Continued.

North American elephantids, Lucas (F. A.), 12.
North American plesiosaurs, Williston, 14.
North American species of Equus, Gidley, 1.
Note on Hylopus of Dawson, Matthew (W. D.), 17.
Notes on Judith River group, Sternberg, 4.
Obesrvations of Orestes St. John on Paleozoic fishes, Eastman, 8.
Observations on the Creodonta, Matthew (W. D.), 1.
Observations paléontologiques dans l'Alaska, Gaudry, 1.
Observations upon Dæmonelix, Peterson, 2.
Occurrence of ichthyosaur-like remains, Merriam (J. C.), 17.
Oligocene Canidæ, Hatcher, 10.
Oligocene horses, Osborn, 31.
Oligocene titanotheres, Osborn, 9.
On the genus Peripristis, St. John, Eastman, 5.
Opisthocœlian dinosaurs, Apatosaurus, Riggs, 7.
Origin of the mammals, Kingsley, 1.
Osteology and relationship of fossil birds, Lucas, 15.
Osteology of Baptanodon, Gilmore, 3.
Osteology of Embolophorus dollovianus, Case, 4.
Osteology of Haplocanthosaurus, Hatcher, 14.
Osteology of Nyctosaurus, Williston, 15.
Osteology of Oxydactylus, Peterson, 1.
Osteology of Sinopa, Matthew (W. D.), 20.
Osteology of skull of Dimetrodon, Case, 7.
Osteology of the Diadectidæ and relations to Chelydosauria, Case, 12.
Paleontological notes, Lucas (F. A.), 20.
Paleontology of Bartholomew County, Ind., mammalian fossils, Edwards (J. J.), 1.
Paleontology of Maryland Miocene deposits, Mammalia, Aves, Reptilia, Case, 9.
Paleontology of Maryland Miocene deposits, Pisces, Eastman, 18.
Paleozoic batrachian footprints, Matthew (G. F.), 25.
Peculiar modification amongst Permian dipnoans, Eastman, 11.
Peculiar occurrence of bitumen, Morgan and Tallmon, 2.
Pelycosaur from Texas, Case, 10.
Pelycosaurierreste von Texas, Broili, 4.
Pelvic girdle of Zeuglodon, Basilosaurus cetoides (Owen), Lucas (F. A.), 2.

Paleontology—Continued.
Vertebrate—Continued.
Permische Stegocephalen und Reptilien aus Texas, Broili, 2.
Permo-Carboniferous sharks, Eastman, 2.
Phylogeny and classification of the Reptilia, Hay, 19.
Phylogeny and classification of the Reptilia, Osborn, 54.
Phylogeny and classification of the Reptilia, Williston, 27.
Phylogeny of the cestraciont group of sharks, Eastman, 7.
Phylogeny of the primates, Brown (A. E.), 1.
Platygonus compressus Le Conte, Wagner, 1.
Platygonus from Texas Pliocene, Gidley, 3.
Pleistocene fissure in northern Arkansas, Brown (B.), 3.
Potter Creek cave, Sinclair, 5.
Prehistoric California, Yates (L. G.), 1.
Preptoceras, a new ungulate, Furlong, 2.
Present problems of paleontology, Osborn, 48.
Preservation of muscle fibers in sharks of Cleveland shale, Dean, 6.
Primary components of vertebræ and their relations to ribs, Osborn, 40.
Primitive characters of the Triassic Ichthyosaurus, Merriam (J. C.), 9.
Proboscidean fossils of Pleistocene deposits in Illinois and Iowa, Udden, 11.
Progress of vertebrate paleontology in America, Osborn, 1.
Progress of vertebrate paleontology in Canada, Lambe, 12.
Proper generic names of Miocene horses, Gidley, 5.
Protostega gigas and other Cretaceous reptiles, Sternberg, 5.
Recent vertebrate paleontology, Osborn, 16.
Recent literature on Laramie formation, Hay, 7.
Recent literature on Triassic Ichthyosauria, Merriam (J. C.), 8.
Recent paleontological induction, Eastman, 15.
Recent vertebrate paleontology, Osborn, 17.
Recent zoopaleontology, Osborn, 2, 3, 22, 28, 45.
Reclassification of Reptilia, Osborn, 26.
Reconstruction of a Cretaceous dinosaur, Beecher, 6.
Relationships and habits of mosasaurs, Williston, 19.
Relationships of the Arthrognathi, Dean, 3.
Relationships of the Phytosauria, McGregor, 1.

Paleontology—Continued.
Vertebrate—Continued.
Remarkable fossil discovery, Beasley, 2.
Report of State geologist of Nebraska, Barbour (E. H.), 8.
Reptile from Triassic of California, Merriam (J. C.), 11.
Reptiles from the Titanothere beds, Loomis, 5.
Reptilian subclasses Diapsida and Synapsida and early history of the Diaptosauria, Osborn, 19.
Restoration of Diceratops, Lull, 7.
Restoration of Dolichorhyncops osborni, Williston, 9.
Restoration of extinct animals, Lucas (F. A.), 9.
Restoration of Megacerops, Lull, 6.
Revised list of casts, etc., in American Museum of Natural History, Osborn, 36.
Revision of American Eocene primates and of the Myxodectidæ, Osborn, 6.
Revision of Phyllocarida from Chemung and Waverly groups of Pennsylvania, Beecher, 8.
Rodent from Colorado Miocene, Matthew (W. D.), 6.
Rodents and ungulates from the John Day series, Sinclair, 6.
Scaphoceros tyrrelli, Osgood, 1.
Search for mammoth and other fossil remains, Maddren, 1.
Shaw mastodon, Hayes (S.), 1.
Skeleton of Hesperornis, Lucas, 16.
Skeleton of Merycodus, Matthew (W. D.), 14.
Skeleton of Nyctodactylus with restoration, Williston, 8.
Skeleton of Titanotherium dispar Marsh, Hatcher, 7.
Skull and skeleton of sauropodous dinosaurs, Osborn, 51.
Skull of Bunælurus, Matthew (W. D.), 4.
Skull of Creosaurus, Osborn, 18.
Skull of Dinocyon from Miocene of Texas, Matthew (W. D.), 3.
Skull of Hypisodus, Matthew (W. D.), 7.
Skull of Nyctodactylus, Williston, 6.
Skull of Triceratops serratus, Lull, 1.
Skulls of Trionychidæ in Bridger deposits of Wyoming, Hay, 16.
Snoutfishes of Kansas, Hay, 3, 11.
Some osteological terms, Williston, 17.
Squamoso-parietal crest of horned dinosaurs, Lambe, 11.
Stegoceras and Stereocephalus, Lambe, 7.
Stomach stones and food of plesiosaurs, Brown (B.), 2.
Stomach stones of the plesiosaurs, Williston, 22.
Structure and relationships of Opisthocœlian dinosaurs, Brachiosauridæ, Riggs, 9.

Paleontology—Continued.
Vertebrate—Continued.
Structure of Dinichthys, Wright (A. A.), 1.
Structure of forefoot of Dimetrodon, Case, 8.
Structure of plesiosaurian skull, Williston, 16.
Structure of the manus in Brontosaurus, Hatcher, 2.
Structure of two Dinichthyds, Hussakof, 2.
Studies relating to the origin of vertebrates, Patten, 2.
Successors of certain North American primates, Wortman, 7.
Teleorhinus browni, Osborn, 33.
Teleosts from the Platte Cretaceous series, Cragin, 1.
Teleosts of the upper Cretaceous, Stewart, 1.
Ten years' progress in mammalian paleontology of North America, Osborn, 49.
Tertiary of Montana, Douglass, 9.
Thalattosauria, Merriam (J. C.), 15.
Tissu osseux chez certains poissons des terrains palæozoiques de Canyon City, Vaillant, 1.
Tooth structure of Mesohippus westoni (Cope), Lambe, 14.
Tortoise from Colorado Miocene, Hay, 17.
Tortoise from the auriferous gravels of California, Sinclair, 4.
Triassic fishes of New Jersey, Eastman, 20.
Trissaic Ichthyoterygia from California and Nevada, Merriam (J. C.), 4.
Triassic ichthyosaurs from California and Nevada, Osborn, 15.
Triassic Reptilia from northern California, Merriam (J. C.), 5.
Triceratops prorsus, Gilmore, 4.
Triceratops prorsus, Schuchert, 14.
Trionychid, Conchochelys admirabilis, from the Puerco beds, Hay, 25.
Trionyx foveatus Leidy and Trionyx vagans Cope from Cretaceous rocks of Alberta, Lambe, 5.
Trituberculur theory, Osborn, 27.
Turtle from Cretaceous rocks, Lambe, 1.
Two islands, Condon, 1.
Types of limb structure in Triassic Ichthyosauria, Merriam (J. C.), 13.
Tyrannosaurus and other Cretaceous carnivorous dinosaurs, Osborn, 50.
Ueber Diacranodus texensis Cope, Broili, 3.
Use of pneumatic tools in preparation of fossils, Riggs, 5.
Valley loess and fossil man of Lansing, Upham, 14.
Vegetables tissues in Dæmonelix, Jennings (O. E.), 1.

Paleontology—Continued.
Vertebrate—Continued.
Vertebral column of Brontosaurus, Riggs, 4.
Vertebrate fossils from Permian beds of Oklahoma, Case, 3.
Vertebrate paleontology, Lambe, 13, 15.
Vertebrate paleontology at the American Museum of Natural History, Hay, 21.
Vertebrate paleontology in the U. S. Geological Survey, Osborn, 25.
Vertebrates from Permian of Texas, Case, 5.
Vertebrates from the Montana Tertiary, Douglass, 8.
Vertebrates from the Trias of Arizona, Lucas (F. A.), 6.
Weight of Brontosaurus, Gregory (W. K.), 1.
Western explorations for fossil vertebrates, Osborn, 53.
When did the American mammoth and mastodon become extinct?, Lloyd, 1.
Winged reptiles, Williston, 7.
Paleobotany.
American fossil cycads, Wieland, 1.
Aralia in American paleobotany, Berry, 6.
American range of the Cycadofilices, White (D.), 24.
American species of Thinnfeldia, Berry, 3.
Ancestors of big trees, Berry, 13.
Autophytography, White (C. H.), 2.
Backward step in paleobotany, Matthew (G. F.), 6.
Bog plant societies of northern North America, Transeau, 1.
Brandon clays, Woodworth, 8.
Buried cypress forests, Bibbins, 3.
Carboniferous ferns from Mazon Creek, Illinois, Sellards, 3.
Carboniferous fossils in Ocoee slates, Smith (E. A.), 1.
Chalcedony lime nuts from Bad Lands, Barbour (E. H.), 2.
Coal Measure forest near Socorro, Herrick (C. L.), 3.
Codonotheca, new type of spore-bearing organ from Coal Measures, Sellards, 6.
Collection de végétaux fossils des États-Unis, Bureau, 1.
Cretaceous and Tertiary plants of Canada, Penhallow, 4.
Cretaceous beds of Long Island, Hollick, 7.
Cretaceous near Cliffwood, Berry, 8
Cycad investigation, Wieland, 5.
Cycads from Black Hills, Wieland, 10.
Discovery of amber on Staten Island, Hollick, 16.
Eocene Plantæ, Hollick, 3.
Example in nomenclature, Ward (L. F.), 6.

Paleontology—Continued.
- *Paleobotany*—Continued.
  - Ficus confused with Proteoides, Berry, 14.
  - Flora of the Matawan formation, Berry, 5, 7.
  - Foliage of Cycadella, Wieland, 9.
  - Fossil alga from Chemung, N. Y., White (D.), 6.
  - Fossil ferns from the Laramie group of Colorado, Hollick, 5.
  - Fossil flora from Cliffwood, Berry, 9.
  - Fossil flora of John Day basin, Oregon, Knowlton, 14.
  - Fossil floras of the Yukon, Knowlton, 17.
  - Fossil flower, Knowlton, 6.
  - Fossil forests in Jackson County (Kansas), Shattuck, 1.
  - Fossil fruits and lignites of Brandon, Vt., Knowlton, 11.
  - Fossil fruits of Tertiary lignite of Brandon, Perkins, 13.
  - Fossil grasses and sedges, Berry, 10.
  - Fossil hickory nuts, Knowlton, 5.
  - Fossil mosses, Knowlton, 10.
  - Fossil nut pine, Knowlton, 9.
  - Fossil nut pine from Idaho, Knowlton, 4.
  - Fossil petal and fruit from Kansas, Hollick, 6.
  - Fossil plant remains at Kreisherville, Hollick, 14.
  - Fossil plants from British Columbia and the Northwest Territories, Penhallow and Ami, 1.
  - Fossil plants from Carboniferous and Permian formations of Kansas, White (D.), 10.
  - Fossil plants from Kansas, Hollick, 9.
  - Fossil plants from Kukak Bay, Knowlton, 16.
  - Fossil plants from State of Washington, Knowlton, 8.
  - Fossil plants from the Shasta group, Fontaine, 3.
  - Fossil plants from vicinity of Porcupine Butte, Montana, Knowlton, 12.
  - Fossil plants in the Kansas Permian, Sellards, 2.
  - Fossil plants of group Cycadofilices, White (D.), 19, 21.
  - Fossil plants of the Judith River beds, Knowlton, 18.
  - Fossil Sequoia from the Sierra Nevada, Jeffrey, 1.
  - Fossil Sequoias in North America, Knowlton, 7.
  - Fossil wood from the Newark formation, Knowlton, 3.
  - Geology of Cerrillos Hills, Johnson (D. W.), 5.
  - Geology of Perry basin, White (D.), 18.
  - Jurassic flora of Douglas County, Oreg., Fontaine, 1.
  - Lignite of Brandon and its fossils, Perkins, 12.

Paleontology—Continued.
- *Paleobotany*—Continued.
  - Lower Cretaceous plants from Montana, Fontaine, 4.
  - New fossil plants from Carboniferous and Devonian, Herzer, 4.
  - New fossil species of Chara, Knowlton, 15.
  - New seed-bearing fern, White (D.), 16.
  - New species of Algæ, White (D.), 1.
  - North American paleobotany, 1890–1900, Penhallow, 2.
  - North American species of Dadoxylon, Penhallow, 1.
  - Notes on sassafras, Berry, 2.
  - Occurrence and origin of amber in eastern United States, Hollick, 17.
  - Occurrence of amber at Kreichersville, Hollick, 20.
  - Old swamp bottom, Berry, 12.
  - Organic remains in post-Glacial deposits, Olson-Seffer, 1.
  - Osmundites skidegatensis n. sp., Penhallow, 3.
  - Paleobotanical aspects of the upper Paleozoic in Nova Scotia, White (D.), 5.
  - Paleobotanical notes, Hollick, 19.
  - Paleobotany of Cretaceous of Long Island, Hollick, 11.
  - Paleontology of the Maryland Miocene deposits, Angiospermæ, Hollick, 10.
  - Paleontology of the Maryland Miocene deposits, Thallophyta - Diatomaceæ, Boyer, 1.
  - Paleozic seed plants, Ward (L. F.), 4.
  - Palm from mid-Cretaceous, Berry, 11.
  - Permian elements in the Dunkard flora, White (D.), 11.
  - Petrified forest, Byers (C. A.), 1.
  - Petrified forests and Painted Desert of Arizona, Carter (O. S. C.), 6.
  - Phylogeny of Liriodendron, Berry, 1.
  - Plants from the Matawan formation, Berry, 4.
  - Position and nature of Maryland cycads, Bibbins, 2.
  - Possible new coal plants, Gresley, 1.
  - Prehistoric California, Yates (L. G.), 1.
  - Proembryo of the Bennettiteæ, Wieland, 8.
  - Psaronius, Herzer, 1.
  - Report of State geologist of Nebraska, Barbour (E. H.), 8.
  - Report on collections from plant-bearing beds in the Jurassic, Fontaine, 2.
  - Report on the Clarno flora, Knowlton, 1.
  - Report on the flora of the Mascall formation, Knowlton, 2.
  - Report on various collections of fossil plants from the older Potomac of Virginia and Maryland, Fontaine, 5.
  - Sabal rigida : a palm from the Laramie, Hatcher, 5.
  - Seeds of Aneimites, White (D.), 17.
  - Six new species, Knowlton, 13,

Paleontology—Continued.
- *Paleobotany*—Continued.
  - Six new species, including two new genera, of fossil plants, Herzer, 2.
  - Species of Whittleseya and their systematic relations, White (D.), 4.
  - Status of Mesozoic floras, Ward (L. F.), 5.
  - Stigmaria structure, Poole, 1.
  - Stratigraphy and paleontology of Black Hills rim, Wieland, 11.
  - Studies in fossil botany, Scott (D. H.), 1.
  - Tæniopteris from the Kansas Permian, Sellards, 1.
  - Tertiary lignite of Brandon, Perkins, 17.
  - Tertiary plants, Penhallow, 5.
  - Tertiary plants from Canada and the United States, Penhallow, 6.
  - Vegetable tissues in Dæmonelix, Jennings (O. E.), 1.
  - Volcanic ash beds of Montana, Rowe, 1.
- *General.*
  - Aggregated colonies in Madreporarian corals, Duerden, 1.
  - Animals before man in North America, Lucas (F. A.), 14.
  - Animals of the past, Lucas (F. A.), 7.
  - Bibliography and index of North American geology, paleontology, petrology, and mineralogy, Weeks, 6, 7, 10, 15.
  - Bibliography of North American geology, paleontology, petrology, and mineralogy for 1892-1900, Weeks, 3.
  - Boring Algæ as agents in disintegration of corals, Duerden, 2.
  - Catalogue of types and figured specimens in the collection of the American Museum of Natural History, Whitfield and Hovey, 1.
  - Distribution of Daimonelix, Barbour (E. H.), 9.
  - Fossils and their teachings, Heilprin, 1.
  - Homoplasy as a law of latent or potential homology, Osborn, 7.
  - Index to North American geology, paleontology, petrology, and mineralogy for 1892-1900, Weeks, 4.
  - Law of adaptive radiation, Osborn, 8.
  - Methods of collecting, preparing, and mounting fossils, Barbour (C. A.), 1.
  - Missing links, Montgomery, 1.
  - Mutation theory, Casey, 6.
  - Nomenclature of types in natural history, Schuchert and Buckman, 1.
  - Oecological features of evolution, Case, 14.
  - Organic remains in ore deposits, Lakes, 75.
  - Origin of fresh-water faunas, Gill, 1.
  - Origin of the Antarctic faunas and floras, Ortmann, 1.
  - Paleontological collections of geological department of American Museum of Natural History, Hovey (E. O.), 8.
  - Paleontological notes, Case, 2.

Paleontology—Continued.
- *General*—Continued.
  - Paleontological speculations, Gratacap, 1, 2, 4.
  - Paleontology and zoology, Whiteaves, 5, 16.
  - Paleozoic seas and barriers in eastern North America, Ulrich and Schuchert, 1.
  - Photography of fossils, Van Ingen, 5.
  - Polar climate in time the major factor in the evolution of plants and animals, Wieland, 4.
  - Present problems of paleontology, Osborn, 48.
  - Relation of phylogenesis to historical geology, White (C. A.), 2.
  - Sandblast in cleaning fossils, Osborn, 38.
  - Stratigraphy versus paleontology in Nova Scotia, White (D.), 8.
  - Stratigraphy versus paleontology in Nova Scotia, Matthew (G. F.), 15.
  - Studies in evolution, Beecher, 1.
  - Tree trunks found with mastodon remains, Gordon (R.), 2.
- *Genera and species described.*
  - Abietites angusticarpus Fontaine, Fontaine, 5.
    - ellipticus Fontaine, Fontaine, 3.
    - macrocarpus Fontaine, Fontaine, 3, 5.
    - marylandicus n. sp., Fontaine, 5.
    - ? sp., Fontaine, 3.
  - Abra longicallus (Scacchi), Glenn, 6.
    - marylandica n. sp., Glenn, 6.
  - Acaciæphyllum n. sp., Fontaine, 3.
    - ellipticum n. sp., Fontaine, 3.
  - Acanthoceras compressum n. sp., Anderson (F. M.), 3.
    - hoplitoides n. sp., Lasswitz, 1.
    - mantelli Sow., Lasswitz, 1.
    - rhotomagense Sow., Lasswitz, 1.
  - Acanthodes beecheri n. sp., Eastman, 4, 6.
    - marshi n. sp., Eastman, 4, 6.
  - Acanthopecten new subg., Girty, 3.
    - carboniferus Stevens, Girty, 3.
  - Acanthosphæra parvula Vinassa, Martin, 8.
  - Acentrophus Traquair, Eastman, 20.
    - chicopensis Newberry, Eastman, 20.
  - Acer bendirei Lesq., Knowlton, 14.
    - dubium n. sp., Penhallow, 4.
    - gigas n. sp., Knowlton, 14.
    - medianum n. sp., Knowlton, 14.
    - merriami n. sp., Knowlton, 14.
    - minor n. sp., Knowlton, 14.
    - oregonianum n. sp., Knowlton, 14.
    - osmonti n. sp., Knowlton, 14.
    - sp. Knowlton, Knowlton, 14.
  - Aceratherium acutum Marsh, Osborn, 34.
    - megalodum Cope, Osborn, 34.
    - profectum Matthew, Osborn, 34.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Acervularia Schweigger, Lambe, 2.
      - davidsoni Milne Edwards and Haime, Lambe, 2.
      - gracilis Billings (sp.), Lambe, 2.
    - Acheloma, Broili, 2.
    - Achitherium minimus n. sp., Douglass, 1.
    - Acidaspis obsoleta n. sp., Van Ingen, 2.
      - quinquespinosa Salter-Lake, Van Ingen, 2.
      - whitfieldi n. sp., Hitchcock (C. H.), 2.
    - Acidota crenata Fabr., var. nigra, n. var., Scudder, 1.
    - Acila H. and A. Adams, Arnold, 2.
    - Acipenser albertensis n. sp., Lambe, 3.
    - Aclisina stevensiana Meek and Worthen?, Girty, 3.
    - Acmea Eschscholtz, Arnold, 2.
      - cerrillosensis n. sp., Johnson (D. W.), 5.
      - depicta Hinds, Arnold, 2.
      - insessa Hinds, Arnold, 2.
      - instabilis Gould, Arnold, 2.
      - mitra Eschscholtz, Arnold, 2.
      - paleacea Gould, Arnold, 2.
      - pelta Eschscholtz, Arnold, 2.
      - spectrum (Nuttall) Reeve, Arnold, 2.
    - Acompsoceras n. gen., Hyatt, 1.
    - Aconeceras n. gen., Hyatt, 1.
    - Acrochordiceras Hyatt, Hyatt and Smith, 1.
      - hyatti Meek, Hyatt and Smith, 1.
    - Acrocrinus amphora Wachsmuth and Springer, Grabau, 8.
      - cassedayi Lyon, Rowley, Greene, 2.
      - cassedayi, var. charlestownensis, n. var. (Rowley), Greene, 2.
      - depressus n. sp. (Rowley), Greene, 2.
      - wachsmuthi n. sp., Rowley, 1.
    - Acrophyllum Thomson and Nicholson, Lambe, 3.
      - oneidäense Billings (sp.), Lambe, 3.
      - rugosum n. sp., Greene, 1.
    - Acrostichopteris parvifolia Fontaine, Fontaine, 5.
    - Acrostichum haddeni n. sp., Hollick, 5.
    - Acrothele abavia n. sp., Matthew (G. F.), 12, 20.
      - avia n. sp., Matthew (G. F.), 2, 12, 20.
      - avia-puteis n. mut., Matthew (G. F.), 12, 20.
      - ? minuta n. sp., Walcott, 12.
      - proavia n. sp., Matthew (G. F.), 2.
      - proles n. sp., Matthew (G. F.), 12.
      - proles, Matthew (G. F.), 20.
      - rarus n. sp., Walcott, 12.
      - subsidua White, Matthew (G. F.), 19.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Acrothyra n. gen., Matthew (G. F.), 7, 10, 20.
      - minor n. sp., Walcott, 12.
      - proavia, Matthew (G. F.), 12, 20.
      - proavia-crassa n. mut., Matthew (G. F.), 12, 20.
      - proavia-prima n. mut., Matthew (G. F.), 10, 12, 20.
      - signata n. sp., Matthew (G. F.), 12, 20.
      - signata-orta, Matthew (G. F.), 12, 20.
      - signata-prima, Matthew (G. F.), 12, 20.
      - signata-sera, Matthew (G. F.), 12, 20.
      - signata-tarda, Matthew (G. F.), 12, 20.
    - Acrotreta Kutorga, Walcott, 6.
      - argenta n. sp., Walcott, 6.
      - attenuata Meek, Walcott, 12.
      - attenuata var.?, Walcott, 12.
      - baileyi, Matthew, Walcott, 6.
      - cf. baileyi, Matthew (G. F.), 19.
      - bisecta n. sp., Matthew (G. F.), 9, 12, 20.
      - bisecta Matthew, Walcott, 6, 12.
      - ? cancellata n. sp., Walcott, 12.
      - concentrica n. sp., Walcott, 6.
      - conula n. sp., Walcott, 6.
      - convexa n. sp., Walcott, 6.
      - curvata n. sp., Walcott, 6.
      - definita n. sp., Walcott, 6.
      - eggegrundensis Wiman, Walcott, 12.
      - emmonsi n. sp., Walcott, 12.
      - gemma Billings, Walcott, 6.
      - gemma var. depressa Walcott, Matthew (G. F.), 19.
      - gracia n. sp., Walcott, 6.
      - idahoensis n. sp., Walcott, 6.
      - idahoensis alta n. var., Walcott, 6.
      - idahoensis sulcata n. var., Walcott, 6.
      - inflata Matthew, Walcott, 6.
      - kutorgai n. sp., Walcott, 6.
      - liani n. sp., Walcott, 12.
      - microscopica missouriensis n. var., Walcott, 6.
      - microscopica tetonensis n. var., Walcott, 6.
      - miser Billings, Walcott, 6.
      - neboensis n. sp., Walcott, 12.
      - nox n. sp., Walcott, 12.
      - ophirensis n. sp., Walcott, 6.
      - ophirensis rugosus n. var., Walcott, 6.
      - ovalis n. sp., Walcott, 6.
      - pacifica n. sp., Walcott, 12.
      - papillata n. sp., Matthew (G. F.), 12, 20.
      - papillata var. lata, Matthew (G. F.), 20.
      - papillata-prima n. mut., Matthew (G. F.), 12, 20.

Paleontology—Continued.
Genera and species described—Continued.
- Acrotreta papillata var., Matthew (G. F.), 12.
  - parvula Wallerius, Walcott, 6.
  - primaæa n. sp., Walcott, 6.
  - sagittalis Salter, Walcott, 6.
  - sagittalis magna Matthew, Walcott, 6.
  - sagittalis taconica Walcott, Walcott, 6.
  - sagittalis transversa, Hartt, Walcott, 6.
  - schmalensei n. sp., Walcott, 6.
  - seebachi n. sp., Walcott, 6.
  - signalis n. sp., Walcott, 6.
  - shantungensis n. sp., Walcott, 12.
  - sipo n. sp., Matthew (G. F.), 12, 20.
  - socialis v. Seebach, Walcott, 6.
  - cfr. socialis von Seebach, Matthew (G. F.), 12, 20.
  - spinosa n. sp., Walcott, 12.
  - subconica Kutorga, Walcott, 6.
  - uplandensis Wiman, Walcott, 12.
  - uplandica limonensis Wiman, Walcott, 12.
  - sp., Matthew (G. F.), 12.
- Actæon Montfort, Arnold, 2.
  - calvertensis n. sp., Martin, 5.
  - lawsoni n. sp., Weaver, 1.
  - ovoides Conrad, Martin, 5.
  - (Rictaxis) punctocœlata Carpenter, Arnold, 2.
  - pusillus (Forbes), Martin, 5.
  - shilohensis Whitfield, Martin, 5.
  - traskii Stearns, Arnold, 2.
- Actæonina? maloniana n. sp., Cragin, 2.
- Actinoceras keewatinense nom. prov., Whiteaves, 17.
- Actinocrinus multiramosus var. altidorsatus n. var., Rowley, Greene, 14.
- Actinocyclus ellipticus Grunow, Boyer, 1.
  - moniliformis Ralfs, Boyer, 1.
- Actinocystis Lindström, Lambe, 2.
  - variabilis Whiteaves, Lambe, 2.
- Actinopteria boydi (Conrad), Kindle, 1.
  - communis (Hall), Weller, 6.
  - decussata Hall, Weller, 6.
  - insignis Clarke?, Weller, 6.
  - reticulata n. sp., Weller, 6.
  - sola n. sp., Clarke, 19.
  - textilis (Hall), Weller, 6.
  - textilis (Hall) var. arenaria (Hall), Weller, 6.
- Actinoptychus heliopelta Grunow, Boyer, 1.
  - undulatus Kützing, Boyer, 1.
- Actinostroma moosensis n. sp., Parks, 5.
  - trentonensis n. sp., Weller, 6.
- Adeonellopsis umbilicata (Lonsdale), Ulrich and Bassler, 4.
- Adeorbis supranitidus S. Wood, Martin, 5.

Paleontology—Continued.
Genera and species described—Continued.
- Adiantites nympharum Heer?, Fontaine, 1.
  - parvifolius n. sp., Fontaine, Fontaine, 5.
- Admete Möller, Arnold, 2.
  - gracilior Carpenter, Arnold, 2.
- Admetopsis? elevata n. sp., Johnson (D. W.), 5.
- Adocus Cope, Wieland, 6.
  - (?) lineolatus Cope, Lambe, 3.
  - punctatus Marsh, Wieland, 6.
  - variolosus (Cope), Lambe, 1, 3.
- Æchmina Jones and Holl, Grabau, 1.
  - spinosa (Hall), Grabau, 1.
- Ælurodon? brachygnathus n. sp., Douglass, 8.
- Æluthorium bicuspis n. sp., Wortman 4.
  - latideus Marsh, Wortman, 4.
- Æora Conrad, Dall, 8.
- Æsculus arctica n. sp., Knowlton, 16.
  - simulata n. sp., Knowlton, 14.
- Æsopus Gould, Arnold, 2.
- Ætobatis Muller and Henle, Eastman, 1.
  - arcuatus Agassiz, Eastman, 1, 18.
- Agabus perditus n. sp., Scudder, 1.
- Aganides discoidalis n. sp., Smith (J. P.), 3.
  - jessieæ Miller and Gurley, Smith (J. P.), 3.
  - propinquus Winchell, Smith (J. P.), 3.
  - romingeri Winchell, Smith (J. P.), 3.
  - rotatorius de Koninck, Smith (J. P.), 3.
  - sciotoensis Miller and Faber, Smith (J. P.), 3.
  - ? shumardianus Winchell, Smith (J. P.), 3.
- Agaricia Lamarck 1801, Vaughan, 2.
  - agaricites (Linnæus), Vaughan, 2.
  - fragilis (Dana), Vaughan, 2.
- Agaricocrinus praecursor n. sp., Rowley, 2.
- Agassizocrinus carbonarius Worthen, Beede, 1.
  - conicus Owen and Shumard, Ulrich, 8.
- Agathiceras Gemmellaro, Smith (J. P.), 3.
  - ciscoense n. sp., Smith (J. P.), 3.
- Agelacrinites beecheri n. sp., Clarke, 3.
  - buttsi n. sp., Clarke, 3.
- Agelacrinus, Spencer (W. K.), 1.
  - cincinnatiensis Roemer, Spencer (W. K.), 1.
  - (Lepidodiscus) pileus Hall, Spencer (W. K.), 1.
- Agnostus cf. cyclopyge Tullberg, Matthew (G. F.), 20.
  - cf. var. declivis, Matthew (G. F.), 20.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Agnostus trisectus Salt., mut. germanus, Matthew (G. F.), 9, 20.
    - trisectus Salt., mut. ponepunctus n. mut., Matthew (G. F.), 9, 20.
  - Agomphus Cope, Wieland, 13.
    - masculinus Wieland n. sp., Wieland, 13.
    - tardus Wieland n. sp., Wieland, 13.
    - turgidus Cope, Wieland, 13.
  - Agoniatites Meek, Smith (J. P.), 3.
    - expansus, Clarke, 2.
    - opimus White and Whitfield, Smith (J. P.), 3.
  - Agraulos saratogensis Walcott, Weller, 6.
  - Agriochœrus maximus n. sp., Douglass, 4.
    - minimus n. sp., Douglass, 4.
  - Agriopoma Dall, Dall, 8.
  - Ailanthus ovata Lesq., Knowlton, 14.
  - Alasmidonta Say, Letson, 1.
    - calceola (Lea) Simpson, Letson, 1.
    - truncata (Wright) Simpson, Letson, 1.
  - Álbertosaurus sarcophagus n. gen. and sp., Osborn, 50.
  - Aldrichiella nom. nov., Vaughan, 16.
  - Alectryonia sp., Shattuck, 8.
  - Aligena H. C. Lea, Arnold, 2.
    - æquata (Conrad), Glenn, 6.
    - æquata var. nuda Dall, Glenn, 6.
    - cerritensis n. sp., Arnold, 2.
    - pustulosa Dall, Glenn, 6.
  - Alisina barnetti n. sp., Kindle, 1.
    - barnetti var. elongata n. var., Kindle, 1.
  - Allerisma terminale Hall, Girty, 3.
  - Allogramma Dall, Dall, 8.
  - Allomeryx planiceps n. gen. and sp., Sinclair, 6.
  - Allonema n. gen., Ulrich and Bassler, 1.
    - fusiforme (Nicholson and Ethridge, jr.), Ulrich and Bassler, 1.
    - ? minimum n. sp., Ulrich and Bassler, 1.
    - moniliforme (Whiteaves) and var. aggregatum n. var., Ulrich and Bassler, 1.
    - waldronense n. sp., Ulrich and Bassler, 1.
  - Allops amplus Marsh, Osborn, 10.
    - crassicornis Marsh, Osborn, 10.
    - serotinus Marsh, Osborn, 10.
  - Allorisma costatum Meek and Worthen, Beede, 1.
    - geinitzi Meek, Beede, 1.
    - granosum (Shumard), Beede, 1.
    - kansasensis n. sp., Beede, 74.
    - subcuneatum Meek, Beede, 1.
  - Alnus coryfolia Lesq., Knowlton, 16.
    - macrodonta n. sp., Knowlton, 14.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Alticamelus n. gen., Matthew (W. D.), 2, 15.
    - altus (Marsh), Matthew (W. D.), 2.
  - Alveolites dispansa n. sp., Greene, 9.
    - subangularis n. sp., Greene, 9.
  - Alveopora regularis Duncan, Vaughan, 2.
  - Amalthea marylandica n. sp., Martin, 5.
  - Amaura Möller, Arnold, 2.
  - Amblypus E. Hitchcock, Lull, 2.
    - dextratus E. Hitchcock, Lull, 2.
  - Amblysiphonella prosseri Clarke, Beede, 1.
  - Ambocœlia nana Grabau, Wood (Elvira), 1.
    - planiconvexa Shumard, Girty, 3.
    - planoconvexa (Shumard), Beede, 1.
    - umbonata (Conrad), Kindle, 1.
    - umbonata (Con.), Weller, 6.
    - umbonata Conrad, mut. pluto nov., Loomis, 4.
    - umbonata Conrad, mut. pygmæa nov., Loomis, 4.
  - Ambonychia? curvata n. sp., Raymond (P. E.), 7.
    - septentrionalis n. sp., Whiteaves, 17.
  - Amiantis, Carpenter, Dall, 8.
  - Amiantis Carpenter, Arnold, 2.
    - section Amiantis s. s., Dall, 8.
    - section Eucallista Dall, Dall, 8.
    - callosa Conrad, Dall, 8.
  - Ammonitella yatesi præcursor, Stanton, 1.
  - Amnicola Gould and Haldeman, Letson, 1.
    - letsoni Walker, Letson, 1.
    - limosa (Say) Hald., Letson, 1.
    - protia Gould, Stearns (R. E. C.), 2.
  - Amnigenia catskillensis Vanuxem sp., Clarke, 4.
  - Amphiblestrum agellus n. sp., Ulrich and Bassler, 4.
    - constrictum n. sp., Ulrich and Bassler, 4.
  - Amphichelydia, Hay, 23.
  - Amphicœlia neglecta McChesney, Kindle and Breger, 1.
  - Amphicyon americanus, Wortman, 1.
    - americanus Wortman, Matthew (W. D.), 5.
    - sinapius n. sp., Matthew (W. D.), 5.
    - ursinus Cope, Matthew (W. D.), 5.
  - Amphigenia elongata (Van.), Weller, 6.
  - Amphilichas n. n. for Platymetopus, Raymond (P. E.), 6.
  - Amphion canadensis Billings, Raymond (P. E.), 5.
  - Amphissa H. and A. Adams, Arnold, 2.
    - corrugata Reeve, Arnold, 2.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Amphissa ventricosa n. sp., Arnold, 2.
    - versicolor Dall, Arnold, 2.
  - Amphistegina lessonii d'Orbigny, Bagg, 1.
  - Amplexopora Ulrich, Ulrich and Bassler, 2.
    - ampla n. sp., Ulrich and Bassler, 2.
    - cingulata Ulrich, Nickles, 6.
    - columbiana Ulrich and Bassler, Hayes and Ulrich, 1.
    - columbiana n. sp., Ulrich and Bassler, 2.
    - cylindracea n. sp., Ulrich and Bassler, 2.
    - filiosa (D'Orbigny), Ulrich and Bassler, 2.
    - multispinosa n. sp., Cummings, 3.
    - septosa (Ulrich), Nickles, 6.
    - persimilis n. sp., Nickles, 6.
  - Amplexus Sowerby, Lambe, 2.
    - archimediformis n. sp., Rowley, 4.
    - cingulatus Billings, Lambe, 2.
    - exilis Billings, Lambe, 2.
    - geniculatus Worthen, Ulrich, 8.
    - radigerus n. sp., Rowley, 1.
    - vermicularis n. sp., Rowley, 1.
    - yandelli Milne Edwards and Haime, Lambe, 2.
    - sp., Girty, 3.
  - Ampyx niagarensis n. sp., van Ingen, 2.
    - (Lonchodomas) hastatus n. sp., Ruedemann, 2.
  - Anachis H. and A. Adams, Arnold, 2.
  - Anaphotidemys n. n. for Chelonides, Hay, 23.
  - Anaphragma n. gen., Ulrich and Bassler, 2.
    - mirabile n. sp., Ulrich and Bassler, 2.
  - Anaptomorphus Cope, Wortman, 14.
    - æmulus Cope, Wortman, 14.
    - æmulus Cope, Osborn, 11.
    - homunculus Cope, Osborn, 11.
  - Anaschisma n. gen., Branson, 2.
    - brachygnatha n. sp., Branson, 2.
    - browni n. sp., Branson, 2.
  - Anastrophia Hall, Grabau, 1.
    - brevirostris Hall, Grabau, 1.
    - internascens Hall, Kindle and Breger, 1.
    - internascens Hall 1879, Beecher, 1.
    - interplicata (Hall), Grabau, 1.
  - Anatina austinensis n. sp., Shattuck, 8.
    - obliquiplicata n. sp., Cragin, 2.
    - ? pliculifera n. sp., Cragin, 2.
  - Anatomites Mojsisovics, Hyatt and Smith, 1.
    - subcylindracea n. sp., Whiteaves, 12.
    - texana n. sp., Shattuck, 8.
  - Anchippus Leidy, Gidley, 5.
  - Anchisauripus n. gen., Lull, 2.
    - dananus (E. Hitchcock), Lull, 2.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Anchisauripus exsertus (E. Hitchcock), Lull, 2.
    - hitchcocki n. sp., Lull, 2.
    - minusculus (E. Hitchcock), Lull, 2.
    - tuberatus (E. Hitchcock), Lull, 2.
    - tuberosus (E. Hitchcock), Lull, 2.
  - Anchura callosa n. sp., Whiteaves, 12.
    - condoniana n. sp., Anderson, 3.
  - Ancyropus E. Hitchcock, Lull, 2.
    - heteroclitus E. Hitchcock, Lull, 2.
  - Andromeda crassa Lesq., Knowlton, 14.
    - flexuosa Newb., Hollick, 11.
    - latifolia Newb., Hollick, 11.
    - parlatorii Heer, Berry, 5, 7.
  - Aneimites fertilis n. sp., White (D.), 16, 17.
  - Anemia robusta n. sp., Hollick, 5.
    - supercretacea n. sp., Hollick, 5.
  - Angelina? sp.?, Matthew (G. F.), 12, 20.
  - Angelus Megerle, Arnold, 2.
  - Angiopteridium canmorense Dawson?, Fontaine, 3.
    - strictinerve Fontaine, Fontaine, 3, 5.
    - strictinerve latifolium Fontaine, Fontaine, 3.
  - Anisoceras cooperi Gabb sp., Whiteaves, 12.
    - subcompressum Forbes sp., Whiteaves, 12.
  - Anisodexis, Broili, 2.
  - Anisonchus Cope, Douglass, 3.
  - Anodonta cornelliana n. sp., Maury, 1.
  - Anodontopsis wabashensis n. sp., Kindle and Breger, 1.
  - Anogmius Cope, Hay, 10.
  - Anogmius Cope, Stewart, 1.
    - altus (Loomis), Hay, 10.
    - aratus (Cope), Hay, 10.
    - evolutus Cope, Hay, 10.
    - evolutus Cope, Stewart, 1.
    - favirostris (Cope), Hay, 10.
    - polymicrodus (Stewart), Stewart, 1.
  - Anolcites Mojsisovics, Hyatt and Smith, 1.
  - Anolcites Mojsisovics, Smith (J. P.), 5.
  - Anolotichia impolita Ulr., Sardeson, 3.
  - Anomalina d'Orbigny, Bagg, 6.
    - ammonoides (Reuss), Bagg, 1.
    - grosserugosa (Gümbel), Bagg, 1, 6, 9.
    - ariminensis (d'Orbigny), Bagg, 9.
    - grosserugosa (Gümbel), Bagg, 9.
    - rotula d'Orbigny, Bagg, 9.
  - Anomalocardia Schumacher, Dall, 8.
    - section Anomalocardia Schumacher, Dall, 8.
    - section Anomalodiscus Dall, Dall, 8.
    - bowdeniana n. sp., Dall, 8.
    - brasiliana Gmelin, Dall, 8.
    - caloosana Dall, Dall, 8.

Paleontology—Continued.
Genera and species described—Continued.
Anomalocardia chipolana n. sp., Dall, 8.
duplininana n. sp., Dall, 8.
floridana Conrad, Dall, 8.
Anomalocaris n. gen., Woodward (H.), 1.
canadensis Whiteaves, Woodward (H.), 1.
Anomalocystites, Hall, Schuchert, 11.
cornutus Hall, Schuchert, 11.
? disparilis Hall, Schuchert, 11.
Anomalodiscus Dall, Dall 8.
Anomia Linné, Arnold, 2.
aculeata Gmelin, Glenn, 6.
lampe, Gray, Arnold, 2.
limatula Dall, Arnold, 2.
marylandica n. sp., Clark and Martin, 2.
mcgeei Clark, Clark and Martin, 2.
navicelloides Aldr., Aldrich, 2.
paucistriata n. sp., Brown (T. C.), 1.
simplex d'Orbigny, Glenn, 6.
simplexiformis n. sp., Brown (T. C.), 1.
Anomocare parvula n. sp., Weller, 6.
Anomoepus E. Hitchcock, Lull, 2.
crassus (C. H. Hitchcock), Lull, 2.
cuneatus C. H. Hitchcock, Lull, 2.
curvatus E. Hitchcock, Lull, 2.
gracillimus (E. Hitchcock), Lull, 2.
intermedius E. Hitchcock, Lull, 2.
isodactylus C. H. Hitchcock, Lull, 2.
'minimus E. Hitchcock, Lull, 2.
scambus E. Hitchcock, Lull, 2.
Anoplia nucleata Hall, Weller, 6.
Anoplotheca Sandberger, Grabau, 1.
acutiplicata (Con.), Weller, 6.
concava (Hall), Weller, 6.
congregata n. sp., Kindle and Breger, 1.
dichotoma (Hall), Weller, 6.
flabellites (Con.), Weller, 6.
hemispherica (Sowerby), Grabau, 1.
plicatula (Hall), Grabau, 1.
Anthocyrtium doronicum Haeckel, Martin, 8.
Anthonomus eversus n. sp., Scudder, 1.
fossilis n. sp., Scudder, 1.
lapsus n. sp., Scudder, 1.
Anticheiropus E. Hitchcock, Lull, 2.
hamatus E. Hitchcock, Lull, 2.
pilulatus E. Hitchcock, Lull, 2.
Antigona Schumacher, Dall, 8.
Antipus E. Hitchcock, Lull, 2.
bifidus E. Hitchcock, Lull, 2.
flexiloquus E. Hitchcock, Lull, 2.
Aorocrinus cassedayi Lyon, Rowley, Greene, 6.
cassedayi var. charlestownensis, Rowley, Greene, 9.
Aparchites minutissimus var. robustus n. var., Ruedemann, 2.
Apatichnus E. Hitchcock, Lull, 2.
circumagens E. Hitchcock, Lull, 2.
minus (E. Hitchcock), Lull, 2.
trifidus Dawson, Matthew (G. F.), 25.
Apatomerus mirus n. gen. and sp., Williston, 15.
Apatosaurus Marsh, Riggs, 7.
excelsus Marsh, Riggs, 7.
Apeibopsis Heer, Perkins, 13.
gaudinii Lx., Perkins, 13, 17.
heerii Lx., Perkins, 13.
parva n. sp., Perkins, 13.
Aphelops (?Diceratherium) brachyodus n. sp., Osborn, 9.
? ceratorhinus n. sp., Douglass, 8.
ceratorhinus Douglass, Osborn, 34.
fossiger Cope, Osborn, 34.
jemezanus Cope, Osborn, 34.
malacorhinus Cope, Osborn, 34.
(?Peraceras) planiceps n. sp., Osborn, 34.
sp., Osborn, 34.
Aphrodina Conrad, Dall, 8.
Aphyllostylus n. gen., Whiteaves, 14.
gracilis n. sp., Whiteaves, 14.
Apiocystites Forbes, Schuchert, 11.
elegans Hall, Schuchert, 11.
Aplocerus montanus Ord., Sinclair, 7.
Aplodontia major fossilis n. subsp., Sinclair, 7.
Aporema Dall, Dall, 8.
Aporrhais potomacensis n. sp., Clark and Martin, 2.
speciosa v. Schlotheim sp., Ravn, 1.
Apternodus mediævus n. gen. and sp., Matthew (W. D.), 9.
Aptychopsis terranovicus, Matthew (G. F.), 1.
Arachnichnus E. Hitchcock, Lull, 2.
dehiscens E. Hitchcock, Lull, 2.
Arachnocrinus extensus W. & Sp. Rowley, Greene, 13.
Arachnophyllum Dana, Lambe, 2.
diffluens Milne Edwards and Haime (sp.), Lambe, 2.
eximium Billings (sp.), Lambe, 2.
mamillare Dale Owen (sp.), Lambe, 2.
pentagonum Goldfuss (sp.), Lambe, 2.
Aralia brittoniana n. sp. Berry, 5.
coriacea Vel., Hollick, 11.
grœnlandica Heer, Berry, 5.
mattewanensis n. sp. , Berry, 5.
palmata Newb., Berry, 5, 7.
ravniana Heer, Berry, 5.
vernonensis n. sp., Fontaine, 5.
? sp., Johnson (D. W.), 5.
? sp. Knowlton, Knowlton, 14.
sp. Knowlton, Knowlton, 14.
Araucarioxylon prosseri n. sp., Penhallow, 1.
virginianum, Knowlton, 3.

Paleontology—Continued.
Genera and species described—Continued.
Araucarites ovatus Hollick, Berry, 5.
virginicus Fontaine, Fontaine, 5.
? sp., Fontaine, 1.
Arca (Linné) Lamarck, Arnold, 2.
(Scapharca) arata Say, Glenn, 6.
bilbao n. sp., Weaver, 1.
camuloensis n. sp., Osmont, 2.
canalis Conrad, Osmont, 2.
(Scapharca) clisea Dall, Glenn, 6.
delicatula n. sp., Casey, 4.
? dumbli n. sp., Cragin, 2.
(Scapharca) elnia n. sp., Glenn, 6.
(Scapharca) idonea Conrad, Glenn, 6.
(Noetia) incile Say, Glenn, 6.
invidiosa n. sp., Casey, 4.
labiata Sowerby, Arnold, 2.
madridensis n. sp., Johnson (D. W.), 5.
(Barbatia) marylandica Conrad, Glenn, 6.
microdonta Conrad, Osmont, 2.
montereyana n. sp., Osmont, 2.
(Scapharca) staminea Say, Glenn, 6.
(Scapharca) subrostrata Conrad, Glenn, 6.
taffii n. sp., Cragin, 2.
trilineata Conrad, Osmont, 2.
vancouverensis Meek, Whiteaves, 12.
vaughani n. sp., Casey, 4.
(Barbatia) virginiæ Wagner, Glenn, 6.
Arcestes Suess, Hyatt and Smith, 1.
andersoni, Hyatt and Smith, 1.
(Proarcestes) pacificus n. sp., Hyatt and Smith, 1.
Arcestidæ Mojsisovics, Hyatt and Smith, 1.
Arcestoidea, Hyatt and Smith, 1.
Archæocidaris M'Coy, Klem, 1.
aculeatus Shumard, Klem, 1.
agassizi Hall, Beede, 1.
agassizi Hall, Klem, 1.
biangulatus Shumard, Klem, 1.
cratis White, Girty, 3.
cratis White, Klem, 1.
dininni White, Klem, 1.
edgarensis Worthen and Miller, Klem, 1.
gracilis Newberry, Klem, 1.
illinoisensis Worthen and Miller, Klem, 1.
keokuk Hall, Klem, 1.
legrandensis Miller and Gurley, Klem, 1.
longispinus Newberry, Klem, 1.
megastylus Shumard, Beede, 1.
megastylus Shumard, Klem, 1.
mucronatus Meek and Worthen, Klem, 1.
newberryi Hambach, Klem, 1.
norwoodi Hall, Klem, 1.
ornatus Newberry, Klem, 1.

Paleontology—Continued.
Genera and species described—Continued.
Archæocidaris ourayensis n. sp., Girty, 3.
shumardanus Hall, Klem, 1.
spinoclavatus Worthen and Miller, Klem, 1.
triplex White?, Girty, 3.
triplex White, Klem, 1.
triserratus Meek, Klem, 1.
trudifer White, Beede, 1.
trudifer White?, Girty, 3.
trudifer White, Klem, 1.
wortheni Hall, Klem, 1.
wortheni Hall, Ulrich, 8.
Archæoplax signifera Simpson, Cushman, 6.
Archæopteris hitchcocki (Dn.) D. W., White (D.), 18.
jacksoni Dn., White (D.), 18.
rogersi Dn., White (D.), 18.
Archegosaurus Goldfuss, Branson, 2.
Archelon ischyros, Wieland, 2, 3.
Archihicoria siouxensis n. gen. and n. sp., Barbour (E. H.), 2.
siouxensis Barbour, Knowlton, 5.
Archimedes confertus n. sp., Ulrich, 8.
lativolvis n. sp., Ulrich, 8.
meekanus Hall, Ulrich, 8.
swallovanus Hall, Ulrich, 8.
Archinacella? deformata (Hall), Raymond (P. E.), 7.
patelliformis (Hall), Weller, 6.
Architectonica tuberculata n. sp., Weaver, 1.
Archoblattina, Sellards, 8.
beecheri, Sellards, 8.
Arctocyonidæ, Matthew (W. D.), 19.
Arcuaceras n. gen., Herzer, 5.
ohioense n. sp., Herzer, 5.
termicameratum n. sp., Herzer, 5.
Arenicolites chemungensis n. sp., Whitfield, 10.
Arges arkansanus n. sp., Van Ingen, 2.
phylctenoides (Green) 1837, Van Ingen, 2.
sp., Van Ingen, 2.
Argoides E. Hitchcock, Lull, 2.
isodactyletus (E. Hitchcock), Lull, 2.
macrodactylotus (E. Hitchcock), Lull, 2.
redfieldianus E. Hitchcock, Lull, 2.
Arges tuberculatus n. sp., Weller, 6.
Argyrotheca schucherti n. sp., Dall, 8.
Arisæma cretaceum Lesq., Berry, 5.
Aristolochia obscura Lx., Perkins, 13.
Aristolochiæphyllum? cellulare n. sp., Ward, Fontaine, 5.
crassinerve Fontaine, Fontaine, 5.
Aristolochites acutus n. sp., Perkins, 13.
apicalis n. sp., Perkins, 13.
brandonianus n. sp., Perkins, 13.
crassicrostatus n. sp., Perkins, 13.
conoideus n. sp., Perkins, 13.
cuneatus n. sp., Perkins, 13.
curvata (Lx.), Perkins, 13.

Paleontology—Continued.

Genera and species described—Continued.

- Aristolochites dubius n. sp., Perkins, 13.
  - elegans n. sp., Perkins, 13, 17.
  - excavatus, n. sp., Perkins, 13.
  - globosus n. sp., Perkins, 13.
  - irregularis n. sp., Perkins, 13.
  - latisulcatus n. sp., Perkins, 13.
  - majus n. sp., Perkins, 13, 17.
  - ovoides n. sp., Perkins, 13.
  - rugosus n. sp., Perkins, 13.
  - sulcatus n. sp., Perkins, 13, 17.
- Arpadites Mojsisovics, Hyatt and Smith, 1.
  - gabbi n. sp., Hyatt and Smith, 1.
- Arretotherium acutidens n. gen. and sp., Douglass, 4.
- Arthracantha punctobrachiata Williams, Wood (Elvira), 3.
- Arthroclema armatum Ulr., Sardeson, 4.
- Arthrodendron n. gen., Ulrich, 4.
  - diffusum n. sp., Ulrich, 4.
- Arthrophycus Hall, Grabau, 1.
- Arthr phycus Hall, Sarle, 4.
  - elegans n. sp., Herzer, 2.
  - harlani (Conrad), Grabau, 1.
- Asaphellus homfrayi var., Matthew (G. F.), 12, 20.
  - (?) planus n. sp., Matthew (G. F.), 12, 20.
- Asaphis centenaria (Conrad), Glenn, 6.
- Asaphus marginalis Hall, Raymond (P. E.), 5.
  - sp. alpha, Raymond (P. E.), 5.
  - sp. beta, Raymond (P. E.), 5.
  - sp. gamma, Raymond (P. E.), 5.
- Ascoceras gibberosum n. sp., Sardeson, 2.
- Ascodictyon Nicholson and Etheridge, jr., Ulrich and Bassler, 1.
  - floreale n. sp., Ulrich and Bassler, 1.
  - parvulum n. sp., Ulrich and Bassler, 1.
  - siluriense Vine, Ulrich and Bassler, 1.
  - sparsum n. sp., Ulrich and Bassler, 1.
  - stellatum Nicholson and Etheridge, jr., Ulrich and Bassler, 1.
- Ashmunella thompsoniana pecosensis n. subsp., Cockerell, 1.
- Ashtarotha Dall, Dall, 8.
- Aspenites n. gen., Hyatt and Smith, 1.
  - acutus, n. sp., Hyatt and Smith, 1.
- Asperipes n. gen., Matthew (G. F.), 21, 30.
  - avipes n. sp., Matthew (G. F.), 21, 30.
  - caudifer Dawson sp., Matthew (G. F.), 30.
  - flexilis n. sp., Matthew (G. F.), 30.
- Aspideretes beecheri n. sp., Hay, 13.
  - beecheri Hay, Hay, 15.

Paleontology—Continued.

Genera and species described—Continued.

- Aspidites Waagen, Hyatt and Smith, 1.
  - hooveri n. sp., Hyatt and Smith, 1.
- Aspidoceras alamitocensis Castillo and Aguilera, Cragin, 2.
- Aspidonectes tritor, Hay, 16.
- Aspidosaurus chiton n. gen. and sp., Broili, 2.
- Asplenium magnum Knowlton, Hollick, 5.
  - subsimplex (Lesq.) Knowlton, Knowlton, 14.
- Astarte Sowerby, Arnold, 2.
- Astarte Sowerby, Dall, 8.
  - section Ashtarotha Dall, Dall, 8.
  - section Astarte s. s., Dall, 8.
  - section Crenimargo Cossmann, Dall, 8.
  - section Digitaria Wood, Dall, 8.
  - section Gonilia Stoliczka, Dall, 8.
  - section Microstagon Cossmann, Dall, 8.
  - section Neocrassina Fischer, Dall, 8.
  - section Rictocyma Dall, Dall, 8.
  - section Tridonta Schumacher, Dall, 8.
  - (Goodallia?) americana n. sp., Dall, 8.
  - bayi Lundgren, Madsen, 1.
  - (Crassinella) branneri n. sp., Arnold, 2.
  - breviacola n. sp., Cragin, 2.
  - calvertensis n. sp., Glenn, 6.
  - castrana n. sp., Glenn, 6.
  - coheni Conrad, Dall, 8.
  - concentrica var. bella Conrad, Dall, 8.
- Astarte? craticula n. sp., Cragin, 2.
  - cuneiformis Conrad, Glenn, 6.
  - (Ashtarotha) cuneiformis Conrad, Dall, 8.
  - (Ashtarotha) distans Conrad, Dall, 8.
  - sp. cf. elegans Sowerby, Madsen, 1.
  - evansi (H. and M.) Whitfield, Johnson (D. W.), 5.
  - exaltata Conrad, Dall, 8.
  - (distans var.?) floridana Dall, Dall, 8.
  - glenni n. sp., Dall, 8.
  - hartzi Lundgren, Madsen, 1.
  - isodontoides n. sp., Cragin, 2.
  - laurentiana Lyell, Dall, 8.
  - malolensis Cragin, Cragin, 2.
  - marylandica Clark, Clark and Martin, 2.
  - meridionalis Gabb, Dall, 8.
  - obruta Conrad, Glenn, 6.
  - (Ashtarotha) obruta Conrad, Dall, 8.
  - opulentora n. sp., Dall, 8.
  - parma Dall, Glenn, 6.
  - (Ashtarotha) parma n. sp., Dall, 8.
  - perplana Conrad, Glenn, 6.

Paleontology—Continued.

Genera and species described—Continued.

- **Astarte (Ashtarotha) perplana Conrad, Dall, 8.**
  - **posticalva n. sp., Cragin, 2.**
  - **sp. cf. sœmanni de Loriol, Madsen, 1.**
  - **symmetrica Conrad, Dall, 8.**
  - **symmetrica Conrad, Glenn, 6.**
  - **cfr. tenera Morris, Ravn, 1.**
  - **thisphila n. sp., Glenn, 6.**
  - **thomasii Conrad, Glenn, 6.**
  - **(Ashtarotha) undulata Say, Dall, 8.**
  - **undulata var. vaginulata Dall, Dall, 8.**
  - **vicina Say, Glenn, 6.**
  - **vicina Say, Dall, 8.**
  - **wagneri n. sp., Dall, 8.**
- **Astartella vera Hall, Beede, 1.**
- **Asthenotoma Harr. et Burr, Casey, 5.**
  - **eximia n. sp., Casey, 5.**
  - **shaleri Vgn., Casey, 5.**
  - **strigosa n. sp., Casey, 5.**
  - **texana Gabb, Casey, 5.**
- **Astrangia (Cœnangia) conradi n. sp., Vaughan, 19.**
  - **lineata (Conrad), Vaughan, 19.**
- **Astrhelia palmata (Goldfuss), Vaughan, 19.**
- **Astrocœnia maloniana n. sp., Vaughan, in Cragin, 2.**
- **Astrodapsis merriami n. sp., Anderson, 7.**
- **Astrodon, Lucas, 20.**
  - **johnstoni Leidy, Hatcher, 16.**
- **Astropecten? montanus n. sp., Douglass, 7.**
- **Astyris H. and A. Adams, Arnold, 2.**
- **Atactopora Ulrich, Ulrich and Bassler, 2.**
  - **angularis, n. sp., Ulrich and Bassler, 2.**
  - **hirsuta Ulrich, Ulrich and Bassler, 2.**
  - **maculata Ulrich, Ulrich and Bassler, 2.**
- **Athrotaxopsis expansa Fontaine, Fontaine, 5.**
- **Athyris crassicardinalis White, Weller, 2.**
  - **fultonensis (Swallow), Kindle, 1.**
  - **spiriferoides (Eaton), Kindle, 1.**
- **Atractites Gümbel, Hyatt and Smith, 1.**
  - **philippii n. sp., Hyatt and Smith, 1.**
- **Atrina harrisii Dall, Glenn, 6.**
  - **piscatoria n. sp., Glenn, 6.**
- **Atrypa Dalman, Grabau, 1.**
  - **calvini Nettleroth, Kindle and Breger, 1.**
  - **? lamellata Hall, Weller, 6.**
  - **nodostriata Hall, Grabau, 1.**
  - **reticularis (Linn.), Weller, 6.**
  - **reticularis Linnæus, Kindle and Breger, 1.**
- **Atrypa reticularis Linnæus 1767, Beecher, 1.**
  - **reticularis (Linnæus), Grabau, 1.**
  - **reticularis (Linnæus), Kindle, 1.**
  - **reticularis var. ellipsoida (Nettleroth), Kindle, 1.**
  - **rugosa Hall, Grabau, 1.**
  - **spinosa Hall, Kindle, 1.**
- **Atrypina disparilis Hall 1852, Beecher, 1.**
  - **imbricata (Hall), Weller, 6.**
- **Aublysodon mirandus Leidy, Stanton and Hatcher, 1.**
- **Aucella pallasii Keyserling, Madsen, 1.**
  - **strongi n. sp., Johnson (D. W.), 5.**
  - **sp. indet., Pompeckj, 1.**
- **Aulacodiscus rogersii (Bailey), Boyer, 1.**
- **Aulacophyllum enormis n. sp., Herzer, 5.**
  - **excentricum n. sp., Herzer, 5.**
- **Aulacorhynchus millipunctatus (Meek and Worthen), Beede, 1.**
- **Aulopora amplexa n. sp., Rowley, 1.**
  - **? anna Beede, Beede, 1.**
  - **longi n. sp., Rowley, 1.**
  - **? prosseri Beede, Beede, 1.**
- **Austrodesinia Dall, Dall, 8.**
- **Aviculipecten McCoy, Girty, 7, 8.**
- **Aviculipecten, Hind, 1.**
- **Aviculopecten carboniferus (Stevens), Beede, 1.**
  - **coxanus Meek and Worthen, Beede, 1.**
  - **crassicostata H. and W., Kindle, 1.**
  - **exactus Hall, Kindle, 1.**
  - **fasciculatus Hall, Kindle, 1.**
  - **germanus Miller and Faber, Beede, 1.**
  - **hertzeri Meek, Beede, 1.**
  - **interlineatus Meek and Worthen, Beede, 1.**
  - **? interlineatus Meek and Worthen, Girty, 3.**
  - **iowensis Miller, Weller, 2.**
  - **maccoyi Meek and Hayden, Beede, 1.**
  - **nebrascensis n. sp., Beede, 2.**
  - **occidentalis, Beede, 8.**
  - **occidentalis (Shumard), Beede, 1.**
  - **occidentalis Shumard, Girty, 3.**
  - **pellucidus Meek and Worthen, Girty, 3.**
  - **princeps (Conrad) Hall, Kindle, 1.**
  - **providencensis (Cox), Beede, 1.**
  - **rectilaterarius (Cox), Beede, 1.**
  - **rectilaterarius Cox, Girty, 3.**
  - **sculptilis Miller, Beede, 1.**
  - **subequivalvus n. sp., Beede, 4.**
  - **(Pterinopecten?) terminalis Hall, Kindle, 1.**
  - **vanvleeti n. sp., Beede, 8.**
  - **sp., Girty, 3.**

Paleontology—Continued.
Genera and species described—Continued.
Aviculopinna americana Meek, Beede, 1.
  illinoiensis Worthen, Beede, 1.
  knighti n. sp., Beede, 2.
  nebrascensis n. sp., Beede, 2.
  nebraskensis Beede, Girty, 3.
  ? peracuta Shumard, Girty, 3.
Axinopsis G. O. Sars, Dall, 8.
Axinulus Verrill and Bush, Dall, 8.
Axophyllum? alleni n. sp., Rowley, 1.
  rudis White and St. John, Beede, 1.
Bactrites Sandberger, Smith (J. P.), 3.
  carbonarius n. sp., Smith (J. P.), 3.
  (sp.) mut. parvus nov., Loomis, 4.
  (sp.) mut. pygmæus nov., Loomis, 4.
Baculites anceps Lamarck, Johnson (D. W.), 5.
  aspero-anceps n. sp., Lasswitz, 1.
  chicoensis, Smith (W. D.), 1.
  fairbanksi n. sp., Anderson, 3.
Badister antecursor n. sp., Scudder, 1.
Baëna antiqua n. sp., Lambe, 3.
  antiqua Lambe, Stanton and Hatcher, 1.
  callosa n. sp., Hay, 15.
  cephalica n. sp., Hay, 13.
  hatcheri Hay, Lambe, 3.
  hatcheri n. sp., Hay, 2.
  marshi n. sp., Hay, 13.
  undata, Hay, 23.
Baiera gracilis (Bean) Bunbury, Fontaine, 2.
Baieropsis foliosa Fontaine, Fontaine, 5.
  longifolia Fontaine, Fontaine, 5.
  pluripartita Fontaine, Fontaine, 5.
Bairdia sp., Girty, 3.
Bakewellia gouldii n. sp., Beede, 8.
Balæna affinis Owen, Case, 9.
Balænoptera sursiplana Cope, Case, 9.
Balanophyllia desmophyllum Milne-Edwards and Haime, Vaughan, 1.
Balanus Lister, Arnold, 2.
  concavus Bronn, Arnold, 2.
  concavus Bronn, Cushman, 9.
  concavus Bronn, Martin, 4.
  proteus Conrad, Cushman, 4.
Balatonites Mojsisovics, Hyatt and Smith, 1.
  shoshonensis n. sp., Hyatt and Smith, 1.
Baptanodon Marsh, Gilmore, 3.
Baptanodon, Merriam (J. C.), 6.
Baptanodon Marsh, Knight (W. C.), 8.
Baptanodon (Sauranodon) Marsh, Gilmore, 2.
  discus Marsh, Gilmore, 3.
  discus?, Gilmore, 1.
  marshi, Merriam (J. C.), 13.
  marshi Knight, Gilmore, 3.
  marshi n. sp., Knight (W. C.), 8.
  natans Marsh, Gilmore, 3.
Baptemys wyomingensis Leidy, Hay, 13.

Paleontology—Continued.
Genera and species described—Continued.
Baptornis advenus, Lucas, 15.
Barillopus n. gen., Matthew (G. F.), 21, 30.
  arctus n. sp., Matthew (G. F.), 30.
  confusus n. sp., Matthew (G. F.), 30.
  unguifer Matt., Matthew (G. F.), 21.
Barinophyton perrianum D. W., White (D.), 18.
  richardsoni (Dn.) D. W., White (D.), 18.
Barnea (Scobina) arcuata (Conrad), Glenn, 6.
Baroda Stoliczka, Dall, 8.
Baropezia n. gen., Matthew (G. F.), 21, 30.
  abscissa n. sp., Matthew (G. F.), 30.
  sydnensis (Dawson), Matthew (G. F.), 21, 30.
Baropus lentus Marsh, Matthew (G. F.), 25.
  unguifer n. sp., Matthew (G. F.), 23.
Barrandeina perriana (Dn.) D. W., White (D.), 18.
Barrendella Hall and Clarke, Grabau, 1.
  fornicata (Hall), Grabau, 1.
Barrioseila subspatulata Meek and Worthen, Kindle, 1.
Barroisiceras hyatti n. sp., Shattuck, 8.
  texanum n. sp., Shattuck, 8.
Barycrinus hoveyi Hall sp., Whitfield, 9.
Basilemys imbricarius (Cope), Stanton and Hatcher, 1.
  ogmius (Cope), Stanton and Hatcher, 1.
Basilosaurus cetoides (Owen), Lucas, 2.
Bathocypris parilis n. sp., Ulrich, 1.
  subæquata n. sp., Ulrich, 1.
Bathygenys alpha n. gen. and sp., Douglass, 4.
  alpha Douglas, Matthew (W. D.), 9.
  borealis Leidy, Case, 13.
Bathyurellus Billings, Raymond (P. E.), 5.
  brevispinus n. sp., Raymond (P. E.), 5.
  minor n. sp., Raymond (P. E.), 5.
Bathyuriscus howelli Walcott, Woodward (H.), 1.
Bathyurus angelini Billings, Raymond (P. E.), 5.
  ellipticus Cleland, Cleland, 3.
  ? levis n. sp., Cleland, 3.
  ? sp. undet., Weller, 6.
Batissa Gray, Dall, 8.
Batocrinus crassitestus n. sp., Rowley, Greene, 12.
  davisi Rowley, Greene, 12.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - **Batocrinus davisi** var. **lanesvillensis** n. var., Rowley, Greene, 12.
    - **davisi** var. **sculptus** n. var., Rowley, Greene, 12.
    - **icosidactylus** Casseday, Rowley, Greene, 12.
    - **irregularis** Casseday, Rowley, Greene, 12.
    - **magnirostris**, n. sp., Rowley, Greene, 12.
    - **spergenensis** Miller, Rowley, Greene, 14.
  - **Batostoma fertile** Ulr., Sardeson, 3.
    - **implicatum** (Nicholson), Nickles, 6.
    - **maysvillensis** n. sp., Nickles, 6.
    - **varians** (James), Nickles, 6.
  - **Batostomella** Ulrich, Grabau, 1.
  - **Batostomella** Ulrich, Condra, 2.
    - **granulifera** (Hall), Grabau, 1.
    - **leia** n. sp., Condra, 1, 2.
  - **Batrachichnus** Woodworth, Matthew (G. F.), 30.
  - **Batrachopus** E. Hitchcock, Lull, 2.
    - **bellus** (E. Hitchcock), Lull, 2.
    - **deweyanus** E. Hitchcock, Lull, 2.
    - **dispar** n. sp., Lull, 2.
    - **gracilior** (E. Hitchcock), Lull, 2.
    - **gracilis** (E. Hitchcock), Lull, 2.
  - **Beachia suessana** (Hall), Weller, 6.
  - **Beguina** Bolten, Dall, 8.
  - **Bela** Gray, Arnold, 2.
    - **cretacea** n. sp., Whiteaves, 12.
    - **fidicula** Gould, Arnold, 2.
    - **sanctæ-monicæ** n. sp. Arnold, 2.
  - **Belemnitella** sp., Pompeckj, 1.
  - **Bellerophon bretonensis** n. sp., Matthew (G. F.), 12, 20.
    - **clausus** Ulrich, Hayes and Ulrich, 1.
    - **crassus** Meek and Worthen, Girty, 3.
    - **curvilineatus** Con., Kindle, 1.
    - **denckmanni** n. sp., Clarke, 19.
    - **giganteus** Worthen?, Girty, 3.
    - **insulæ** n. sp., Matthew (G. F.), 12, 20.
    - **koeneni** n. sp., Clarke, 19.
    - **leda** Hall, Kindle, 1.
    - **lyra** Hall, Kindle, 1.
    - **panneus** White, Weller, 2.
    - **patulus** Hall, Kindle, 1.
    - **pelops** Hall, Kindle, 1.
    - **pelops** Hall, Parks, 5.
    - **percarinatus** Conrad?, Girty, 3.
    - **shelbiensis** n. sp., Clarke and Ruedemann, 1.
    - **semisculptus** n. sp., Matthew (G. F.), 12, 20.
    - **sublævis** Hall, Sardeson, 11.
    - **sp., Girty, 3.**
    - **sp.**, Kindle, 1.
    - **sp.** undet., Weller, 2.
  - **Bellucina** Dall, Dall, 8.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - **Bembidium damnosum** n. sp., Scudder, 1.
    - **expletum** n. sp., Scudder, 1.
    - **haywardi** n. sp., Scudder, 1.
    - **præteritum** n. sp., Scudder, 1.
    - **vanum** n. sp., Scudder, 1.
    - **vestigium** n. sp., Scudder, 1.
  - **Berberis? gigantea** n. sp., Knowlton, 14.
  - **Berenicea maloniana** n. sp., Cragin, 2.
  - **Beryx** sp. undet., Johnson (D. W.), 5.
  - **Betula bendirei** n. sp., Knowlton, 14.
    - **? dayana** n. sp., Knowlton, 14.
    - **heteromorpha** n. sp., Knowlton, 14.
  - **Betulites? hatcheri** n. sp., Knowlton, 18.
    - **populifolius** Lesq.?, Berry, 6.
  - **Beyrichia barretti** n. sp., Weller, 6.
    - **dagon** Clarke, Loomis, 4.
    - **deckerensis** n. sp., Weller, 6.
    - **jerseyensis** n. sp., Weller, 6.
    - **kümmeli** n. sp., Weller, 6.
    - **manliensis** n. sp., Weller, 6.
    - **montaguensis** n. sp., Weller, 6.
    - **nearpassi** n. sp., Weller, 6.
    - **perinflata** n. sp., Weller, 6.
    - **smocki** n. sp., Weller, 6.
    - **sussexensis** n. sp., Weller, 6.
    - **triceps** n. sp., Matthew (G. F.), 20.
    - **wallpackensis** n. sp., Weller, 6.
    - **sp.**, Girty, 3.
  - **Beyrichites** Waagen, Hyatt and Smith, 1.
  - **Beyrichites**, Waagen, Smith (J. P.), 5.
    - **rotelliformis** Meek, Smith (J. P.), 5.
    - **rotelliformis** Meek, Hyatt and Smith, 1.
  - **Bicarpellites** n. gen., Perkins, 13.
    - **grayana** (Lx., sp.), Perkins, 13.
    - **knowltoni** n. sp., Perkins, 13, 17.
    - **minimus** n. sp., Perkins, 13.
    - **obesus** n. sp., Perkins, 13.
    - **rotundus** n. sp., Perkins, 13.
    - **rugosus** n. sp., Perkins, 13, 17
    - **vermontanus** (Lx.), Perkins, 13.
  - **Bicia** n. gen., Walcott, 1.
    - **gemma** Billings, Walcott, 1.
    - **whiteavesi** n. sp., Walcott, 1.
  - **Biddulphia acuta** (Ehrenberg), Boyer, 1.
    - **condecora** (Ehrenberg), Boyer, 1.
    - **decipiens** Grunow, Boyer, 1.
    - **interpunctata** (Grunow), Boyer, 1.
    - **semicircularis** (Brightwell), Boyer, 1.
    - **suborbicularis** Grunow, Boyer, 1.
    - **tessellata** (Greville), Boyer, 1.
  - **Biflustra torta** Gabb and Horn, Ulrich, 2.
  - **Billingsella** Hall and Clarke, Walcott, 12.
    - **? anomala** n. sp., Walcott, 12.
    - **? appalachia** n. sp., Walcott, 12.
    - **coloradoensis** Shumard, Walcott, 12.
    - **dice** n. sp., Walcott, 12.

Paleontology—Continued.
Genera and species described—Continued.
Billingsella exporrecta Linnarsson, Walcott, 12.
exporrecta var. rugosicostata n. var., Walcott, 12.
harlanensis n. sp., Walcott, 12.
hicksi (Salter) Davidson; Walcott, 12.
highlandensis Walcott, Walcott, 12.
lindstromi Linnarsson, Walcott, 12.
major n. sp., Walcott, 12.
obscura n. sp., Walcott, 12.
orientalis Whitfield, Walcott, 12.
plicatella n. sp., Walcott, 12.
pumpellyi n. sp., Walcott, 12.
retroflexa, Matthew (G. F.), 20.
richthofeni n. sp., Walcott, 12.
romingeri Barr, Walcott, 12.
saffordi n. sp., Walcott, 12.
salemensis Walcott, Walcott, 12.
(Otusia) sandbergi Winchell, Walcott, 12.
striata n. sp., Walcott, 12.
whitfieldi Walcott, Walcott, 12.
Bilobites varica (Con.), Weller, 6.
varicus, Beecher, 1.
Bison Smith, McClung, 1.
kansensis n. sp., McClung, 1.
Bittium Leach, Arnold, 2.
asperum Gabb, Arnold, 2.
californicum Dall and Bartsch, Arnold, 2.
(Elachista) californicum n. sp., Dall and Bartsch, 1.
filosum Gould, Arnold, 2.
quadrifilatum Carpenter, Arnold, 2.
rugatum Carpenter, Arnold, 2.
(Styliferina) tenuisculpta Carpenter, Arnold, 2.
williamsoni n. sp., Arnold, 2.
Blastomeryx Cope, Matthew (W. D.), 14.
gemmifer Cope, Matthew (W. D.), 14.
wellsi n. sp., Matthew (W. D.), 14.
? sp., Matthew (W. D.), 2.
Blothrophyllum Billings, Lambe, 2.
coniferum n. sp., Greene, 1.
decorticatum Billings, Lambe, 2.
greenei n. sp. (Rowley), Greene, 2.
houghtoni (Rominger), Greene, 11.
Bolivina d'Orbigny, Bagg, 6.
aenariensis (Costa), Bagg, 9.
beyrichii var. alata Seguenza, Bagg, 6.
dilatata Reuss, Bagg, 9.
dilatata var. angusta Egger, Bagg, 9.
punctata d'Orbigny, Bagg, 9.
punctata var. substriata Egger, Bagg, 9.
textilarioides Reuss, Bagg, 9.

Paleontology—Continued.
Genera and species described—Continued.
Bollia Jones and Holl, Grabau, 1.
cornucopiæ n. sp., Ruedemann, 2.
symmetrica (Hall), Grabau, 1.
Bolporites americanus Billings, Ruedemann, 2.
Bordenia, n. gen., Greene, 2.
knappi Hall, Greene, 6.
zaphrentiformis n. sp., Greene, 2.
Boreodon matutinus n. sp., Lambe, 3.
matutinus Lambe, Stanton and Hatcher, 1.
Bornia Philippi, Arnold, 2.
depressa n. sp., Glenn, 6.
mactroides (Conrad), Glenn, 6.
marylandica n. sp., Glenn, 6.
retifera Dall, Arnold, 2.
triangula Dall, Glenn, 6.
Borsonia Bellardi, Arnold, 2.
Bothriolepis, Patten, 1.
coloradensis n. sp., Eastman, 16.
major (Ag.), Eastman, 16.
Bothrodendron? n. sp., White (D.), 10.
Botryocrinus americanus n. sp., Rowley, Greene, 13.
Bourdotia Dall, Dall, 8.
Bottosaurus perrugosus Cope, Lambe, 3.
Bowdenia Dall, Dall, 8.
Brachauchenius lucasi n. gen. and sp., Williston, 14.
lucasi Williston, Lucas, 17.
Brachiocrinus (Herpetocrinus?) nodosarius Hall, Talbot, 2.
Brachiopteris pinnata Dn., var. angustipinna D. W., White (D.), 18.
Brachiosaurus Riggs, Riggs, 9.
altithorax, Riggs, 6, 9.
Brachybrachium brevipes, n. gen. and sp., Williston, 23.
Brachyphyllum crassicaule Fontaine, Fontaine, 5.
macrocarpum Newb., Hollick, 11.
macrocarpum Newb., Berry, 6.
mamillare Brongniart, Fontaine, 1.
? storrsii Ward n. sp., Fontaine, 2.
Bradoria n. gen., Matthew (G. F.), 2, 20.
? ornata, Matthew (G. F.), 13, 20.
rugulosa n. sp., Matthew (G. F.), 2, 13, 20.
scrutator n. sp., Matthew (G. F.), 2, 13, 20.
vigilans n. sp., Matthew (G. F.), 2, 13, 20.
vigilans mut. obesa, Matthew (G. F.), 20.
Bradorona, Matthew (G. F.), 20.
observator n. sp., Matthew (G. F.), 13.
Bradoria n. gen., Matthew (G. F.), 2,
observator var. benepuncta, Matthew (G. F.), 20.
observator mut. lævis, Matthew (G. F.), 20.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Bradorona perspicator n. sp., Matthew (G. F.), 13, 20.
    - perspicator mut. magna, Matthew (G. F.), 20.
    - perspicator mut. major, Matthew (G. F.), 20.
    - spectator, n. sp., Matthew (G. F), 13, 20.
    - spectator var. acuta, Matthew (G. F.), 20.
    - spectator mut. æquata, Matthew (G. F.), 20.
    - spectator mut. spinosa, Matthew (G. F.), 20.
  - Brandonia n. gen., Perkins, 13.
    - globulus n. sp., Perkins, 13, 17.
  - Brimosaurus Leidy, Williston, 14.
  - Bröggeria n. subg. of Obolus, Walcott, 6.
  - Brongniartia trentonensis (Simpson), Collie, 3.
  - Bronteus Goldfuss, Grabau, 1.
    - aquilonaris n. sp., Whiteaves, 17.
    - ekwanensis n. sp., Whiteaves, 17.
    - lunatus Bill., Weller, 6.
    - lunatus Billings, Ruedemann, 2.
    - niagarensis Hall, Grabau, 1.
  - Brontosaurus, Osborn and Granger, 1.
  - Brontosaurus, Hatcher, 2, 8.
  - Brontosaurus, Gregory (W. K.), 1.
  - Brontosaurus, Matthew (W. D.), 21.
  - Brontosaurus Marsh, Riggs, 4.
  - Brontosaurus, Osborn, 51.
    - sp., Osborn, 32.
  - Brontotherium bucco Cope, Osborn, 10.
    - curtum Marsh, Osborn, 10.
    - dolichoceras Scott and Osborn, Osborn, 10.
    - gigas Marsh, Osborn, 10.
    - hypoceras Cope, Osborn, 10.
    - leidyi n. sp., Osborn, 10.
  - Bryograptus Lapworth, Ruedemann, 8.
    - lapworthi n. sp., Reudemann, 8.
    - pusillus n. sp., Ruedemann, 8.
  - Bucania Hall, Grabau, 1.
    - champlainensis Whitfield, Raymond (P. E.), 1.
    - devonica Hall and Whitf., Kindle, 1.
    - punctifrons (Emm.), Weller, 6.
    - trilobata (Conrad), Grabau, 1.
    - sp. undet., Kindle and Breger, 1.
  - Bucanopsis perelegans (W. and W.), Weller, 2.
  - Buchiola angolensis n. sp., Clarke, 19.
    - conversa n. sp., Clarke, 19.
    - halli n. sp., Clarke, 19.
    - ? livoniæ n. sp., Clarke, 19.
    - lupina n. sp., Clarke, 19.
    - cf. prümiensis Steininger (sp.), Clarke, 19.
    - retrostriata v. Buch (sp.), Clarke, 19.
    - retrostriata v. Buch, mut. pygmæa nov., Loomis, 4.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Buchiola scabrosa n. sp., Clarke, 19.
    - stuprosa n. sp., Clarke, 19.
  - Buccinofusus parilis Conrad, Martin, 5.
  - Buccinum? sp., Dall, 10.
  - Bulimina affinis d'Orbigny, Bagg, 9.
    - buchiana d'Orbigny, Bagg, 9.
    - elegans d'Orbigny, Bagg, 9.
    - elegantissima d'Orbigny, Bagg, 9.
    - elongata d'Orbigny, Bagg, 9.
    - ovata d'Orbigny, Bagg, 9.
    - pupoides d'Orbigny, Bagg, 9.
  - Bulimorpha chrysalis Meek and Worthen, Girty, 3.
    - ? helderbergiæ n. sp., Weller, 6.
  - Bulimulus sp.?, Ravn, 1.
  - Bulla Linné, Arnold, 2.
    - punctulata A. Adams, Arnold, 2.
    - quoyi Gray, Arnold, 2.
  - Bullia (Molophorus) angloana n. sp., Anderson, 7.
  - Bullinula subglobosus n. sp., Weaver, 1.
  - Bulliopsis integra Conrad, Martin, 5.
    - marylandica Conrad, Martin, 5.
    - quadrata Conrad, Martin, 5.
  - Bumastus elongatus n. sp., Weller, 6.
    - transversalis n. sp., Weller, 6.
    - trentonensis (Emm.), Weller, 6.
  - Bunælurus, Matthew (W. D.), 4.
    - infelix n. sp., Matthew (W. D.), 9.
  - Buthotrephis divaricata n. sp., White (D.), 1.
    - newlini n. sp., White (D.), 1.
  - Bythinella Moquin-Tandon, Letson, 1.
    - obtusa (Lea) Binney, Letson, 1.
  - Bythocypris cylindrica Hall sp., Ruedemann, 2.
    - nearpassi n. sp., Weller, 6.
  - Bythopora Miller and Dyer, Grabau, 1.
    - spinulosa (Hall), Grabau, 1.
  - Bythotrephis gracilis Hall, Grabau, 1.
    - lesquereuxi, Grabau, 1.
    - yukonensis n. sp., Ami, 48.
  - Cadoceras Fischer, Pompeckj, 1.
    - catostoma n. sp., Pompeckj, 1.
    - crassum n. sp., Madsen, 1.
    - grewingki n. sp., Pompeckj, 1.
    - petelini n. sp., Pompeckj, 1.
    - schmidti n. sp., Pompeckj, 1.
    - stenoloboide n. sp., Pompeckj, 1.
    - wosnessenski Grew. sp., Pompeckj, 1.
    - sp., Pompeckj, 1.
    - sp. indet., Pompeckj, 1.
  - Cadulus Philippi, Arnold, 2.
    - abruptus Meyer and Aldrich, Clark and Martin, 2.
    - newtonensis Meyer and Aldrich, Martin, 5.
    - nitentior Carpenter, Arnold, 2.
    - thallus (Conrad), Martin, 5.
  - Cæcum Fleming, Arnold, 2.
    - californicum Dall, Arnold, 2.

Paleontology—Continued.

Genera and species described—Continued.

- Cæcum calvertense n. sp., Martin, 5.
  - crebricinctum Carpenter, Arnold, 2.
  - greensboroense n. sp., Martin, 5.
  - magnum Stearns, Arnold, 2.
  - patuxentium n. sp., Martin, 5.
- Cænopus persistens n. sp., Osborn, 34.
- Cæsalpinia ovalifolia n. sp., Hollick, 10.
- Calceocrinus alleni n. sp., Rowley, 3.
  - granuliferus n. sp., Rowley, Greene, 7.
- Californites n. gen., Hyatt and Smith, 1.
  - merriami n. sp., Hyatt and Smith, 1.
- Callianassa Leach, Pilsbry, 1.
  - mortoni n. sp., Pilsbry, 1.
  - whiteavesii Woodward, Whiteaves, 12.
- Calliostoma Swainson, Arnold, 2.
  - annulatum Martyn, Arnold, 2.
  - aphelium Dall, Martin, 5.
  - bellum (Conrad), Martin, 5.
  - calvertanum n. sp., Martin, 5.
  - canaliculatum Martyn, Arnold, 2.
  - costatum Martyn, Arnold, 2.
  - distans (Conrad), Martin, 5.
  - eboreum (Wagner), Martin, 5.
  - gemmulatum Carpenter, Arnold, 2.
  - humile (Conrad), Martin, 5.
  - marylandicum n. sp., Martin, 5.
  - peralveatum (Conrad), Martin, 5.
  - philanthropus (Conrad), Martin, 5.
  - philanthropus var., Martin, 5.
  - reclusum (Conrad), Martin, 5.
  - tricolor Gabb, Arnold, 2.
  - virginicum (Conrad), Martin, 5.
  - wagneri Dall, Martin, 5.
  - sp., Clark and Martin, 2.
- Callista Poli, Arnold, 2.
  - (Amiantis) callosa Conrad, Arnold, 2.
  - newcombiana Gabb, Arnold, 2.
  - subdiaphana Carpenter, Arnold, 2.
  - subdiaphana Carpenter, pedroana, n. var., Arnold, 2.
- Callithaca Dall, Dall, 8.
- Callocardia A. Adams, Dall, 8.
  - (Agriopoma) gatunensis n. sp., Dall, 8.
  - gatunensis var. multiflosa Dall, Dall, 8.
  - (Pitaria) kincaidii n. sp., Dall, 10.
  - (Agriopoma) morrhuana Linsley, Dall, 8.
  - (Agriopoma) parkeria Glenn, Dall, 8.
  - (Agriopoma) prunensis n. sp., Glenn, 6.
  - (Agriopoma) sayana (Conrad), Glenn, 6.
  - (Agriopoma) sayana Conrad, Dall, 8.
  - (Agriopoma) sincera n. sp., Dall, 8.
  - (Agriopoma) subnasuta (Conrad), Glenn, 6.

Paleontology—Continued.

Genera and species described—Continued.

- Callocardia (Agriopoma) subnasuta Conrad, Dall, 8.
- Callocystites Hall, Grabau, 1.
- Callocystites Hall, Schuchert, 11.
  - canadensis (Billings), Schuchert, 11.
  - jewettii Hall, Schuchert, 11.
  - jewettii Hall, Grabau, 1.
- Callograptus Hall, Ruedemann, 8.
  - cf. diffusus Hall, Ruedemann, 8.
  - salteri Hall, Ruedemann, 8.
- Callomarginata Carpenter, Arnold, 2.
- Callonema bellatula Hall, Parks, 5.
  - bellatula Hall, Kindle, 1.
  - clarki Nettleroth, Kindle, 1.
  - conus n. sp., Kindle, 1.
  - filosum n. sp., Hall, Clarke, 19.
  - imitator (Hall and Whitf.), Kindle, 1.
  - lichas Hall, Kindle, 1.
- Callopora Hall, Grabau, 1.
  - elegantula Hall, Grabau, 1.
  - multitabulata Ulr., Sardeson, 3.
  - multitabulata (Ulrich), Nickles, 6.
  - nodulosa (Nicholson), Nickles, 6.
  - sigillarioides (Nicholson), Nickles, 6.
  - sp. undet., Weller, 6.
- Calloporina n. gen., Ulrich and Bassler, 2.
  - parva n. sp., Ulrich and Bassler, 2.
- Callucina Dall, Dall, 8.
- Calycites alatus n. sp., Hollick, 11.
- Calymene Brongt., Grabau, 1.
  - blumenbachi niagarensis Hall, Grabau, 1.
  - camerata, Con., Weller, 6.
  - niagarensis Hall, Clarke and Ruedemann, 1.
  - platys Green, Kindle, 1.
  - platys Green, Parks, 5.
  - senaria Con., Weller, 6.
  - cf. vogdesi Foerste, Kindle and Breger, 1.
- Calyptogena Dall, Dall, 8.
- Calyptræa aperta (Solander), Clark and Martin, 2.
  - aperta (Solander), Martin, 5.
  - centralis (Conrad), Martin, 5.
  - greensboroensis n. sp., Martin, 5.
- Calyptraphorus jacksoni Clark, Clark and Martin, 2.
  - trinodiferus Conrad, Clark and Martin, 2.
  - trinodiferus var. (?), Clark and Martin, 2.
- Camarella bernensis n. sp., Sardeson, 9.
  - inornata n. sp., Weller, 6.
  - owatonnensis n. sp., Sardeson, 9.
- Cameroceras proteiforme (Hall), Weller, 6.
- Camarocrinus Hall, Schuchert, 11.
  - saffordi Hall, Schuchert, 11.
  - stellatus Hall, Schuchert, 11.
  - ulrichi Schuchert, Schuchert, 11.

aleontology—Continued.
- *Genera and species described*—Continued.
  - Camarocrinus ulrichi n. sp., Schuchert, 6.
    - ulrichi stellifer n. var., Schuchert, 11.
  - Camarophorella lenticularis (W. and W.), Weller, 2.
  - Camarophoria caput-testudinis (White), Weller, 2.
  - Camarospira eucharis Hall, Kindle, 1.
  - Camarotœchia Hall and Clarke, Grabau, 1.
    - acinus Hall 1863, Beecher, 1.
    - acinus Hall, Grabau, 1.
    - cf. acinus Hall, Kindle and Breger, 1.
    - carolina Hall, Kindle, 1.
    - congregata (Conrad), Kindle, 1.
    - ekwanensis n. sp., Whiteaves, 17.
    - heteropsis (Win.), Weller, 2.
    - hudsonica n. sp., Grabau, 9.
    - indianensis Hall, Clarke and Ruedemann, 1.
    - indianensis Hall 1863, Beecher, 1.
    - major n. sp., Raymond (P. E.), 7.
    - metallica White, Girty, 3.
    - neglecta Hall 1852, Beecher, 1.
    - ? neglecta Hall, Grabau, 1.
    - ? neglecta Hall (sp.), Clarke and Ruedemann, 1.
    - nitida n. sp., Kindle, 1.
    - obtusiplicata Hall, Grabau, 1.
    - paucipiicata n. sp., Wood (Elvira), 1.
    - persinuata (Win.), Weller, 2.
    - pristina n. sp., Raymond (P. E.), 7.
    - prolifica (?) Hall, Wood (Elvira), 1.
    - sappho Hall, Kindle, 1.
    - tethys (Billings), Kindle, 1.
    - whitii Hall 1863, Beecher, 1.
  - Camerosaurus Cope, Riggs, 2.
    - (Proterocameroceras) brainerdi Whitfield (sp.), Ruedemann, 9.
  - Campeloma Rafinesque, Letson, 1.
    - decisa Say, Letson, 1.
    - harlowtonensis n. sp., Stanton, 4.
    - vetula Meek and Hayden, Stanton and Hatcher, 1.
  - Campodus de Koninck, Eastman, 9.
  - Campodus, Eastman, 6, 13.
    - corrugatus (Newberry and Worthen), Eastman, 9.
    - variabilis (Newb. and W.), Eastman, 3, 10.
  - Campophyllum torquium (Owen), Beede, 1.
    - torquium Owen, Girty, 3.
  - Campyloprion, Eastman, 6, 13.
    - annectans n. gen. and sp., Eastman, 3.
  - Cancellaria Lamarck, Arnold, 2.
    - alternata Conrad, Martin, 5.
    - annosa Ald., Aldrich, 2.
    - bifoliata n. sp., Aldrich, 2.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Cancellaria (Trigonostoma) biplicifera Conrad, Martin, 5.
    - (Sveltia) calvertensis n. sp., Martin, 5.
  - Cancellaria condoni n. sp., Anderson, 7.
    - cooperi Gabb, Arnold, 2.
    - corbula Conrad, Martin, 5.
    - crawfordiana Dall, Arnold, 2.
    - dalliana n. sp., Anderson, 7.
    - engonata Conrad, Martin, 5.
    - graciloides Aldrich var., Clark and Martin,, 2.
    - joaquinensis n. sp., Anderson, 7.
    - lunata Conrad, Martin, 5.
    - (Admete) marylandica n. sp., Martin, 5.
    - (Cancellariella) neritoidea n. sp., Martin, 5.
    - pacifica n. sp., Anderson, 7.
    - (Sveltia) patuxentia n. sp., Martin, 5.
    - (Trigonostoma) perspectiva Conrad, Martin, 5.
    - (Narona) potomacensis n. sp., Clark and Martin, 2.
    - prunicola n. sp., Martin, 5.
    - rapella n. sp., Johnson (C. W.), 1.
    - reticuloides n. sp., Martin, 5.
    - simplex n. sp., Anderson, 7.
    - tritonidea Gabb, Arnold, 2.
    - vespertina n. sp., Anderson, 7.
    - sp., Clark and Martin, 2.
    - (Sveltia) sp., Martin, 5.
  - Cancellariella n. subg., Martin, 5.
  - Cancellophycus rhombicum n. sp., Ulrich, 4.
  - Cancer Linné, Arnold, 2.
    - breweri Gabb, Arnold, 2.
    - proavitus Packard, Çushman, 6.
    - ? sp., Weaver, 1.
  - Canidæ, Matthew (W. D.), 19.
  - Canis indianensis Leidy, Merriam (J. C.), 7.
  - Cannartidium sp., Martin, 8.
  - Cannartiscus amphicylindricus Haeckel, Martin, 8.
    - marylandicus n. sp., Martin, 8.
  - Capromeryx furcifer n. gen. and sp., Matthew (W. D.), 8.
  - Capromeryx Matthew, Matthew (W. D.), 14.
    - furcifer Matthew, Matthew (W. D.), 14.
  - Capulus cassensis n. sp., Kindle, 1.
    - corrugatus (nom. prov.), Whiteaves, 12.
    - paralius (W. and W.), Weller, 2.
    - vomerium (Win.), Weller, 2.
  - Carabocrinus geometricus n. sp., Hudson, 1.
  - Carcharias collata n. sp., Eastman, 18.
    - (Prionodon) egertoni (Agassiz), Eastman, 18.
    - incidens n. sp., Eastman, 18.

Paleontology—Continued.
Genera and species described—Continued.
Carcharias lævissimus (Cope), Eastman, 18.
magna (Cope), Eastman, 18.
Carcharodon auriculatus (Blainville), Eastman, 1.
megalodon (Charlesworth), Eastman, 18.
Cardiocardita Anton, Dall, 8.
Cardiocaris, Clarke, 8.
Cardiocephalus sternbergi n. gen. and sp., Broili, 2.
Cardioceras canadense nom. prov., Whiteaves, 9.
Cardiomorpha missouriensis Shumard, Beede, 1.
Cardiomya A. Adams, Dall, 8.
Cardiopsis crassicostata Hall and Whitfield, Kindle, 1.
Cardita (Bruguière) Lamarck, Dall, 8.
section Cardita s. s. Dall, 8.
section Carditamera Conrad, Dall, 8.
section Glans, Megerle, Dall, 8.
aldrichi n. sp., Casey, 4.
(Carditamera) arata Conrad, Dall, 8.
(Carditamera) catharia n. sp., Dall, 8.
(Carditamera) guppyi Dall, Dall, 8.
(Carditamera) prestoni n. sp., Dall, 8.
protracta (Conrad), Glenn, 6.
(Carditamera) recta Conrad, Dall, 8.
(Carditamera) tegea n. sp., Dall, 8.
(Carditamera) vaughani n. sp., Dall, 8.
Carditamera Conrad, Dall, 8.
Carditella E. A. Smith, Dall, 8.
Cardites Link, Dall, 8.
Carditopsis Smith, Dall, 8.
Carex clarkii n. sp., Berry, 10.
Cardium (Linné) Lamarck, Arnold, 2.
(Granocardium) budæense n. sp., Shattuck, 8.
(Cerastoderma) calvertensium n. sp., Glenn, 6.
(Cerastoderma) corbis Martyn, Arnold, 2.
(Cerastoderma) craticuloide Conrad, Glenn, 6.
(Lævicardium) elatum Sowerby, Arnold, 2.
(Fragum) medium Linné, Glenn, 6.
(Cerastoderma) laqueatum Conrad, Glenn, 6.
(Cerastoderma) leptopleurum Conrad, Glenn, 6.
(Lævicardium) mortoni Conrad, Glenn, 6.
(Cerastoderma) patuxentium n. sp., Glenn, 6.

Paleontology—Continued.
Genera and species described—Continued.
Cardium (Ringicardium) procerum Sowerby, Arnold, 2.
(Trachycardium) quadrigenarium Conrad, Arnold, 2.
(Lævicardium) substriatum Conrad, Arnold, 2.
(Protocardia) texanum Conrad, Shattuck, 8.
(Protocardia) vaughani n. sp., Shattuck, 8.
Caricella pyruloides (?) (Conrad), Clark and Martin, 2.
Carinaropsis carinata Hall, Ruedemann, 2.
deleta n. sp., Sardeson, 9.
(or Bellerophon) phalera n. sp., Sardeson, 9.
Carpenteroblastus n. gen., Rowley, 1.
pentagonus n. sp., Rowley, 1.
veryi n. sp., Rowley, Greene, 7.
Carpites Schimper, Perkins, 13.
alatus n. sp., Knowlton, 18.
inequalis n. sp., Perkins, 13.
judithæ n. sp., Knowlton, 18.
minutulus Lesq., Berry, 6.
ovalis n. sp., Perkins, 13.
pruni n. sp., Knowlton, 18.
trigonus n. sp., Perkins, 13.
Carpolithes Schlotheim, Perkins, 13.
brandonianus Lx., Perkins, 13.
brandonianus Lesquereux, Knowlton, 11.
confinis D. W., White (D.), 18.
elongatus n. sp., Perkins, 13.
emarginatus n. sp., Perkins, 13.
grandis n. sp., Perkins, 13.
hitchcockii n. sp., Perkins, 13.
juglandiformis Berry, Berry, 7.
lunatus Dn., White (D.), 18.
mucronatus n. sp., Perkins, 13.
obtusus n. sp., Perkins, 13.
ovatus n. sp., Perkins, 13.
parvus n. sp., Perkins, 13.
simplex n. sp., Perkins, 13.
solidus n. sp., Perkins, 13.
vermontanus n. sp., Perkins, 13.
Carpolithus bucklandii Williamson?, Fontaine, 1.
cliffwoodensis n. sp., Berry, 5.
douglasensis n. sp., Fontaine, 1.
dubius n. sp., Berry, 5.
elongatus n. sp., Fontaine, 1.
juglandiformis n. sp., Berry, 5.
marylandicus n. sp., Hollick, 3.
var. rugosus n. var., Hollick, 3.
mattewanensis n. sp., Berry, 6.
olallensis Ward n. sp., Fontaine, 1.
oregonensis n. sp., Fontaine, 1.
ostryæformis nom. nov., Berry, 6.
Carstenia n. gen. Hyatt, 1.
Carychium bermudense n. sp., Gulick, 1.
Caryocaris Salter, Ruedemann, 8.
oblongus Gurley, Ruedemann, 8.
Caryocrinus Say, Grabau, 1.
ornatus Say, Grabau, 1.

Paleontology—Continued.
Genera and species described—Continued.
Caryophyllia arnoldi Vaughan, Arnold, 2.
  californica Vaughan n. sp., Arnold, 2.
  pedroensis Vaughan n. sp., Arnold, 2.
Cassia? sp., Newb., Knowlton, 14.
Cassidulus californicus n. sp., Anderson, 7.
Cassis cælata Conrad, Martin, 5.
  sp. Dall, 10.
Castalia stantoni n. sp., Knowlton, 18.
Catopterus J. H. Redfield, Eaton, 1.
Catopterus Redfield, Eastman, 20.
  gracilis J. H. Redfield, Eastman, 20.
  redfieldi Egerton, Eastman, 20.
Caulinites inquirendus n. sp., Hollick, 11.
Caulopteris magnifica n. sp., Herzer, 2.
Cavaria dumosa n. sp., Ulrich, 2.
Cavilucina Fischer, Dall, 8.
Cayugæa n. gen., Lambe, 2.
  whiteavesiana n. sp., Lambe, 2.
Celastrophyllum acutidens Fontaine, Fontaine, 5.
  albædomus Ward n. sp., Fontaine, 5.
  brittonianum Hollick, Fontaine, 5.
  brookense Fontaine?, Fontaine 5.
  elegans, n. sp., Berry, 5, 6.
  hunteri Ward, Fontaine, 5.
  latifolium Fontaine, Fontaine, 5.
  ? marylandicum n. sp., Fontaine, 5
  obovatum Fontaine, Fontaine, 5.
  ? saliciforme Ward n. sp., Fontaine, 5.
Celastrus arctica Heer, Hollick, 11.
  confluens n. sp., Knowlton, 14.
  dignatus n. sp., Knowlton, 14.
Cellepora cribrosa n. sp., Ulrich and Bassler, 4.
  massalis n. sp., Ulrich and Bassler, 4.
Celtites Mojsisovics, Hyatt and Smith, 1.
  halli Mojsisovics, Hyatt and Smith, 1.
Celtitidæ, Hyatt and Smith, 1.
Cenosphæra porosissima Vinassa, Martin, 8.
Centrinus disjunctus n. sp., Scudder, 1.
Centronella? biplicata n. sp., Weller, 6.
  glansfagea (Hall), Kindle, 1.
  ? subrhomboidea n. sp., Weller, 6.
Centrosaurus n. gen., Lambe, 10.
  apertus n. sp., Lambe, 10, 11.
Cephalotaxopsis ramosa Fontaine?, Fontaine, 3, 4.
  ? rhytidodes Ward, n. sp., Fontaine, 3.
Cephalotropis Cope, Case, 9.
  coronatus Cope, Case, 9.
Cepolis (Hemitrochus) agassizii n. sp., Dall, 15.

Paleontology—Continued.
Genera and species described—Continued.
Cepolis (Plagioptycha) duclosiana var. columbiana Dall, nov., Dall, 15.
  (Hemitrochus) exumana n. sp., Dall, 15.
  (Plagioptycha) gregoriana n. sp., Dall, 15.
  (Plagioptycha) inaguana n. sp., Dall, 15.
  (Plagioptycha) inaguana var. subandrosi Dall nov., Dall, 15.
  (Plagioptycha) pharcida n. sp., Dall, 7.
  (Hemitrochus) troscheli Pfeiffer, Dall, 15.
  (Hemitrochus) varians Menke, Dall, 15.
Ceramopora, Hall, Grabau, 1.
  imbricata Hall, Grabau, 1.
  incrustans Hall, Grabau, 1.
Cerastoderma Mörch, Arnold, 2.
Ceratiocaris McCoy, Grabau, 1.
  acuminata Hall, Grabau, 1.
  (Phasganocaris?) deweyi Hall, Grabau, 1.
  (Limnocaris) præcedens n. sp., Clarke, 12.
Ceratites de Haan, Hyatt and Smith, 1.
Ceratites de Haan, Smith (J. P.), 5.
  (Gymnotoceras) blakei Gabb, Smith (J. P.), 5.
  (Gymnotoceras) blakei Gabb, Hyatt and Smith, 1.
  humboltensis n. sp., Hyatt and Smith, 1.
  vogdesi n. sp., Smith (J. P.), 5.
Ceratitidæ, Hyatt and Smith, 1.
Ceratitoidea, Hyatt and Smith, 1.
Ceratocephala coalescens n. sp., Van Ingen, 2.
  goniata Warder, Van Ingen, 2.
Ceratocephala goniata Warder, Kindle and Breger, 1.
  nodulata n. sp., Van Ingen, 2.
Ceratodus eruciferus Cope, Stanton and Hatcher, 1.
  hieroglyphus Cope, Stanton and Hatcher, 1.
Ceratogaulus rhinocerus n. gen. and sp., Matthew (W. D.), 6.
Ceratopora agglomerata n. sp. (Grabau), Greene, 2.
  conglomerata n. sp., Greene, 4.
  flabellata n. sp., Greene, 4.
  nanus n. sp., Greene, 4.
  separata n. sp., Greene, 4.
Ceratops Marsh, Stanton and Hatcher, 1.
  belli (Lambe), Stanton and Hatcher, 1.
  canadensis (Lambe), Stanton and Hatcher, 1.
  montanus Marsh, Stanton and Hatcher, 1.
  recurvicornis (Cope), Stanton and Hatcher, 1.

Paleontology—Continued.
Genera and species described—Continued.
Ceraurus hudsoni n. sp., Raymond (P. E.), 5.
  (Crotalocephalus) niagarensis Hall, Kindle and Breger, 1.
  pleurexanthemus Green, Weller, 6.
  pompilius Billings, Raymond (P. E.), 5.
Ceriocrinus craigi (Worthen), Beede, 1.
  harshbargeri n. sp., Beede, 4.
  hemisphericus (Shumard), Beede, 1.
  missouriensis (Miller and Gurley), Beede, 1.
  ? monticulatus Beede, Beede, 1.
  ? priscus n. sp., Rowley, Greene, 11.
Cerion (Strophiops) agassizii Dall, Dall, 15.
  (Strophiops) blandi Pilsbry and Vanatta, Dall, 15.
  (Strophiops) eleutheræ P. and V., var. druplum Dall nov., Dall, 15.
  (Strophiops) glans Küster, Dall, 15.
  (Strophiops) grayi Maynard, Dall, 15.
  (Strophiops) lentiginosum Maynard, Dall, 15.
  (Strophiops) maynardi Pilsbry and Vanatta, Dall, 15.
  (Strophiops) rhyssum n. sp., Dall, 7.
Ceriopora micropora Goldfuss, Ulrich, 2.
Cerithidea Swainson, Arnold, 2.
  californica Haldemann, Arnold, 2.
Cerithiopsis calvertensis n. sp., Martin, 5.
  subulata (Montagu), Martin, 5.
Cerithium arculferum n. sp., Cragin, 2.
  harveyi n. sp., Whiteaves, 12.
  ? texanum n. sp., Shattuck, 8.
  vancouverense n. sp., Whiteaves, 12.
  sp., Dall, 10.
Cervalces americanus (Harlan), Osborn, 36.
Cetophis heteroclitus Cope, Case, 9.
Cetotherium cephalum Cope, Case, 9.
  megalophysum Cope, Case, 9.
  parvum Trouessart, Case, 9.
Chænocardiola Holzapfel, Clarke, 19.
Chænomya leavenworthensis (Meek and Hayden), Beede, 1.
  leavenworthensis Meek and Hayden, Girty, 3.
Chætetes milleporaceus Milne-Edwards and Haime, Beede, 1.
  milleporaceus Milne-Edwards and Haime, Girty, 3.
Chama (Pliny) Linné, Arnold, 2.
Chama (Linné) Bruguière, Dall, 8.
  caloosana n. sp., Dall, 8.
  chipolana n. sp., Dall, 8.
  congregata Conrad, Glenn, 6.
Chama congregata Conrad, Dall, 8.
  corticosa Conrad, Dall, 8.
  crassa Heilprin, Dall, 8.
  draconis n. sp., Dall, 8.
  exogyra Conrad, Arnold, 2.
  involuta Guppy, Dall, 8.
  lyelli n. sp., Dall, 8.
  macerophylla Gmelin, Dall, 8.
  mississippiensis Conrad, Dall, 8.
  monroensis n. sp., Aldrich, 2.
  pellucida Sowerby, Arnold, 2.
  striata Emmons, Dall, 8.
  tampaensis n. sp., Dall, 8.
  willcoxi Dall, Dall, 8.
Chamelea Mörch, Dall, 8.
Champosaurus Cope, Osborn, 19.
Champsosaurus Cope, Stanton and Hatcher, 1.
  annectens Cope, Lambe, 3.
  brevicollis Cope, Stanton and Hatcher, 1.
  vaccinsulensis Cope, Stanton and Hatcher, 1.
Chara springeræ n. sp., Knowlton, 15.
Chætopleura apiculata (Say) Martin, 5.
Cheirodus orbicularis (Newberry and Worthen), Eastman, 10.
Cheirurus mars n. sp., Hudson, 1.
Cheirotheroides E. Hitchcock, Lull, 2.
  pilulatus E. Hitchcock, Lull, 2.
Chelone sp., Case, 9.
Chelonoides E. Hitchcock, Lull, 2.
  incedens E. Hitchcock, Lull, 2.
Chelydosauria Cope, Case, 12.
Chicoreus Montfort, Arnold, 2.
Chiloceras sp., Clarke, 19.
Chione Megerle, Arnold, 2.
Chione Megerle von Mühlfeld, Dall, 8.
  section Chamelea Mörch, Dall, 8.
  section Chione s. s., Dall, 8.
  section Clausinella Gray, Dall, 8.
  section Gomphina Mörch s. s., Dall, 8.
  section Lirophora Conrad, Dall, 8.
  section Macridiscus Dall, Dall, 8.
  section Timoclea Brown, Dall, 8.
  ? section Volupia Defrance, Dall, 8.
  subgenus Gomphina Mörch, Dall, 8.
  (Lirophora) alveata Conrad, Dall, 8.
  alveata (Conrad), Glenn, 6.
  (Lirophora) ballista n. sp., Dall, 8.
  (Lirophora) burnsii Dall, Dall, 8.
  cancellata Linné, Dall, 8.
  chipolana n. sp., Dall, 8.
  corticaria Rogers, Dall, 8.
  (? Chamelea) craspedonia n. sp., Dall, 8.
  cribraria Conrad, Dall, 8.
  erosa n. sp., Dall, 8.
  (Lirophora) glytocyma n. sp., Dall, 8.
  (Timoclea) grus Holmes, Dall, 8.
  (Lirophora) hendersonii n. sp., Dall, 8.

'aleontology—Continued.

Genera and species described—Continued.

- Chione (Lirophora) latilirata Conrad, Dall, 8.
  - latilirata (Conrad), Glenn, 6.
  - (Lirophora) mactropsis Conrad, Dall, 8.
  - (Chamelea) nuciformis Heilprin, Dall, 8.
  - parkeria n. sp., Glenn, 6.
  - (Chamelea) rhodia n. sp., Dall, 8.
  - (Chamelea) spada n. sp., Dall, 8.
  - (Lirophora) ulocyma Dall, Dall, 8.
  - (Lirophora) victoria n. sp., Conrad, Dall, 8.
  - (Lirophora) xesta n. sp., Dall, 8.
  - sp. indet., Dall, 8.
- Chionella Cossmann, Dall, 8.
- Chiton? sp., Weller, 6.
- Chilotrypa Ulrich, Grabau, 1.
  - ostiolata (Hall), Grabau, 1.
- Chlamys Bolten, Arnold, 2.
- Chlidonophora Dall, Dall, 8.
- Chlorostoma Swainson, Arnold, 2.
  - aureotinctum Forbes, Arnold, 2.
  - brunneum Philippi, Arnold, 2.
  - funebrale A. Adams, Arnold, 2.
  - funebrale A. Adams var. subapertum Carpenter, Arnold, 2.
  - gallina Forbes, Arnold, 2.
  - montereyi Kiener, Arnold, 2.
  - (Omphalius) viridulum var. ligulatum Menke, Arnold, 2.
- Choffaticeras n. gen., Hyatt, 1.
- Chomatodus inconstans St. John and Worthen, Eastman, 10.
- Chondrites alpestris Heer, Ulrich, 4.
  - divaricatus Fischer-Ooster, Ulrich, 4.
- Chondrodonta n. gen., Stanton, 2.
  - glabra n. sp., Stanton, 2.
  - munsoni (Hill), Stanton, 2.
- Chonetes Fischer de Waldheim, Grabau, 1.
  - arcuatus Hall, Kindle, 1.
  - arcuatus Hall, Weller, 6.
  - burlingtonensis n. sp., Weller, 2.
  - cinctatus n. sp., Herzer, 5.
  - coronatus Conrad, Raymond (P. E.), 3, 4.
  - coronatus (Con.)?, Weller, 6.
  - cornutus (Hall), Grabau, 1.
  - cf. cornutus Hall, Kindle and Breger, 1.
  - flemingi Norwood and Pratten, Girty, 3.
  - flemingi var. verneuilianus Norwood and Pratten, Girty, 3.
  - geinitzianus Waagen, Girty, 3.
  - glaber Geinitz, Beede, 1.
  - granulifer Owen, Beede, 1.
  - granulifer Owen, Girty, 3.
  - gregarius n. sp., Weller, 2.
  - hudsonica Clarke, Weller, 6.
  - illinoisensis Worthen, Girty, 3.
  - jerseyensis Weller, Schuchert, 4.
  - jerseyensis Weller, Weller, 6.

Paleontology—Continued.

Genera and species described—Continued.

- Chonetes lepidus Hall, Kindle, 1.
  - manitobiensis Whiteaves, Kindle, 1.
  - mesolobus Norwood and Pratten, Beede, 1.
  - mesolobus Norwood and Pratten, Girty, 3.
  - mucronatus Hall, Kindle, 1.
  - mucronatus Hall, Wood (Elvira), 1.
  - mucronatus Hall, Raymond (P. E.), 3, 4.
  - robustus n. sp., Raymond (P. E.), 3, 4.
  - scitulus Hall, Raymond (P. E.), 3, 4.
  - scitulus Hall, Wood (Elvira), 1.
  - subquadratus Nettleroth, Kindle, 1.
  - verneuilianus Norwood and Pratten, Beede, 1.
  - vicinus (Castelnau), Kindle, 1.
  - yandellanus Hall, Shimer, 5.
  - yandellanus Hall, Kindle, 1.
  - sp. undet., Weller, 6.
- Chonopectus fischeri (N. & P.), Weller, 2.
- Chonophyllum Edwards and Haime, Grabau, 1.
- Chonophyllum Milne Edwards and Haime, Lambe, 2.
  - belli Billings, Lambe, 2.
  - canadense Billings (sp.), Lambe, 2.
  - curvatum n. sp., Herzer, 5.
  - cylindricum n. sp., Herzer, 5.
  - infundibulum n. sp., Greene, 1.
  - magnificum Billings, Lambe, 2.
  - niagarense Hall, Grabau, 1.
  - nymphale Billings (sp.), Lambe, 2.
  - pygmæum n. sp., Greene, 8.
  - typicum n. sp., Greene, 1.
- Chonostrophia complanata (Hall), Weller, 6.
  - jervensis Schuchert, Weller, 6.
- Chonostrophia jervensis n. sp., Schuchert, 1.
  - jervisensis Schuchert, Shimer, 5.
  - montrealensis n. sp., Schuchert, 1.
- Chorus Gray, Arnold, 2.
  - belcheri Hinds, Arnold, 2.
  - carisaensis n. sp., Anderson, 7.
- Christiania trentonensis n. sp., Ruedemann, 2.
- Chrysallida Carpenter, Arnold, 2.
- Chrysemys inornata n. sp., Loomis, 5.
  - wyomingensis Leidy, Hay, 13.
- Chrysodomus Swainson, Arnold, 2.
  - aphelus Dall, Rivers, 1.
  - arnoldi n. sp., Rivers, 1.
  - engonatus (Heilprin), Clark and Martin, 2.
  - griseus Dall, Rivers, 1.
  - merriami n. sp., Rivers, 1.
  - patuxentensis n. sp., Martin, 5.
  - rectirostris Carpenter, Arnold, 2.
  - tabulatus Baird, Arnold, 2.

Paleontology—Continued.

Genera and species described—Continued.

- Chrysodomus sp., Dall, 10.
  - sp. indet., Arnold, 2.
- Clctyocha fibula (?) Ehrenberg, Martin, 8.
- Cidaroblastus Hambach, 1.
  - parvus n. sp., Hambach, 1.
- Cimoliasaurus Leidy, Williston, 14.
  - magnus Leidy, Lambe, 3.
  - snowii Williston, Williston, 14.
- Cimolichthys Leidy, Loomis, 1.
  - contracta Cope, Loomis, 1.
  - merrillii Cope, Loomis, 1.
  - nepæolica Cope, Loomis, 1.
  - semianceps Cope, Loomis, 1.
- Cinnamomum bendirei n. sp., Knowlton, 14.
  - corrugatum n. sp., Perkins, 8.
  - lignitum n. sp., Perkins, 13.
  - lignitul Perkins, Perkins, 17.
  - novæ-angliæ Lx., Perkins, 13.
  - ovoides n. sp., Perkins, 13.
- Circe Schumacher, Dall, 8.
- Circenita Jousseaume, Dall, 8.
- Circomphalus Mörch, Dall, 8.
- Cladiscothallus wardi, Renault, 1.
- Cladochonus? bennetti Beede, Beede, 1.
- Cladodus, Clark (W.), 1.
- Cladodus Agassiz, Claypole, 5.
  - clarki Claypole, Claypole, 5.
  - formosus n. sp., Hay, 4.
  - fyleri Newberry, Claypole, 5.
  - kepleri Newberry, Claypole, 5.
  - knightianus (Cope), Eastman, 10.
  - occidentalis Leidy, Eastman, 10.
  - rivi-petrosi Claypole, Claypole, 5.
  - sinuatus Claypole, Claypole. 5.
- Cladophlebis acuta Fontaine, Fontaine, 5.
  - acuta angustifolia n. var., Fontaine, 5.
  - acutiloba (Heer) Fontaine n. comb., Fontaine, 1.
  - alata Fontaine, Fontaine, 2.
  - alata Fontaine?, Fontaine, 3.
  - browniana (Dunker) Seward, Fontaine, 3.
  - constricta Fontaine, Fontaine, 4.
  - denticulata (Brongniart) Nathorst non Fontaine, Fontaine, 1.
  - falcata Fontaine, Fontaine, 3, 5
  - falcata montanensis Fontaine n. comb., Fontaine, 4.
  - haiburnensis (Lindley and Hutton) Brongniart?, Fontaine, 1.
  - heterophylla Fontaine, Fontaine, 4.
  - huttoni (Dunker) Fontaine n. comb., Fontaine, 2.
  - parva Fontaine, Fontaine, 3.
  - pecopteroides n. sp., Fontaine, 1.
  - ungeri (Dunker) Ward n. comb., Fontaine, 3.
  - vaccensis Ward n. sp., Fontaine, 1, 2.
  - virginiensis Fontaine, Fontaine, 5.
- Cladopora Hall, Grabau, 1.
  - multipora Hall, Grabau, 1.
  - multipora Hall, Clarke and Ruedemann, 1.
  - multiseriata n. sp., Weller, 6.
  - rectilineata Simpson, Weller, 6.
  - seriata Hall, Grabau, 1.
  - sp., Girty, 3.
- Cladoselache fyleri, Dean, 6.
- Clænodon, Matthew (W. D.), 1.
- Claosaurus annectens Marsh, Beecher, 6.
  - (Thespesius) annectens Marsh, Hatcher, 3.
- Clathrodictyon problematicum n. sp., Parks, 5.
- Clathrodityum ostiolatum Nicholson, Clarke and Ruedemann, 1.
- Clathropora Hall, Grabau, 1.
  - alcicornis Hall, Grabau, 1.
  - frondosa Hall, Grabau, 1.
- Clathrospira subconica Hall, Ruedemann, 2.
- Clathurella Carpenter, Arnold, 2.
- Clavæblastus, Hambach, 1.
- Clavilithes chamberlaini n. sp., Johnson and Grabau, 1.
  - chamberlaini Johnson and Grabau, Grabau, 16.
  - columbaris n. sp., Aldrich, 2.
  - humerosus (Conrad), Grabau, 16.
  - kennedyanus Harris, Grabau, 16.
  - pachyleurus (Conrad), Grabau, 16.
  - raphanoides (Conrad), Grabau, 16.
  - ? salebrosus (Conrad), Grabau, 16.
  - texanus Harris, Grabau, 16.
  - vicksburgensis (Conrad), Grabau, 16.
- Clavulina soldanii, Guppy, 4.
- Clavulites n. gen., Girty, 5.
  - howardensis n. sp., Girty, 5.
- Clausina Brown, Dall, 8.
- Clausinella Gray, Dall, 8.
- Cleiothyris orbicularis McChesney, Girty, 3.
  - roissyi (L'Eveille), Beede, 1.
- Clementia Gray, Dall, 8.
  - grayi Dall, Dall, 8.
  - inoceriformis Wagner, Dall, 8.
- Clemmys hesperia n. sp., Hay, 9.
  - saxea n. sp., Hay, 9.
- Clepsydrops natalis, Case, 6.
- Clidastes stenops Cope, Williston, 10.
- Clidiophora Carpenter, Arnold, 2.
- Clidiophora Carpenter, Dall, 8.
  - punctata Conrad, Arnold, 2.
- Clidophorus neglectus Hall, Weller, 6.
- Climacograptus phyllophorus Gurley, Weller, 6.
- Clintonia oblongifolia n. sp., Penhallow, 4.
- Climactichnites, Woodworth, 6.
- Cleiocrinus Billings, Springer (F.), 3.
  - magnificus Billings, Springer (F.), 3.
  - regius Billings, Springer (F.), 3.

aleontology—Continued.

Genera and species described—Continued.

- Cleithyris hirsuta Hall, Weller, 2.
- Clementia inoceriformis (Wagner), Glenn, 6.
- Clidophorus obscurus n. sp., Raymond P E. 7
- Climacograptus Hall, Ruedemann, 8.
  - ? antennarius Hall sp., Ruedemann, 8.
  - pungens n. sp., Ruedemann, 8.
  - scharenbergi, Ruedemann, 2.
- Clinopistha antiqua Meek, Kindle, 1.
  - striata Nettleroth, Kindle, 1.
  - subnasuta Hall and Whitfield, Kindle, 1.
- Cliona alaskana Dall, Dall, 10.
- Clionites Mojsisovics, Hyatt and Smith, 1.
  - (Neanites) californicus n. sp., Hyatt and Smith, 1.
  - (Shastites) compressus n. sp., Hyatt and Smith, 1.
  - fairbanksi n. sp., Hyatt and Smith, 1.
  - (Traskites) robustus n. sp., Hyatt and Smith, 1.
  - (Stantonites) rugosus n. sp., Hyatt and Smith, 1.
  - sp. ind., Burckhardt and Scalia, 1.
- Clionychia marginalis n. sp., Raymond (P. E.), 7.
- Clisiophyllum Dana, Lambe, 2.
  - billingsi Dawson (sp.), Lambe, 2.
- Clypidella bimaculata Dall, Arnold, 2.
- Clypites Waagen, Hyatt and Smith, 1.
  - tenuis n. sp. Hyatt and Smith, 1.
- Cocculus minutus n. sp., Hollick, 11.
- Cochlespira Con., Casey, 5.
- Cochlespirella n. gen., Casey, 4.
- Cochlespiropsis n. gen., Casey, 5.
  - blanda n. sp., Casey, 5.
  - engonata Con., Casey, 5.
- Cochliodus, Eastman 8.
- Cochliolepis striata Dall, Martin, 5.
- Cochlodesma Couthouy, Dall, 8.
- Codakia Scopoli, Dall, 8.
  - (Jagonia) chipolana n. sp., Dall, 8.
  - (Jagonia) erosa n. sp., Dall, 8.
  - (Jagonia) magnoliana n. sp., Dall, 8.
  - orbicularis Linné, Dall, 8.
  - (Jagonia) orbiculata Montagu, Dall, 8.
  - (Jagonia) pertenera n. sp., Dall, 8.
  - (Jagonia) speciosa Rogers, Dall, 8.
  - spinulosa n. sp., Dall, 8.
  - (Jagonia) textilis Guppy, Dall, 8.
  - (Jagonia) vendryesi n. sp., Dall, 8.
  - (Jagonia) sp. indet., Dall, 8.
- Codaster Maccoy, Hambach, 1.
  - attenuatus Lyon, Rowley, Greene, 5, 7.

Paleontology—Continued.

Genera and species described—Continued.

- Codaster attenuatus? Lyon, Rowley, Greene, 5.
  - attenuatus var. robustus n. var., Rowley, Greene, 5.
  - gracillimus Rowley, 4.
  - grandis Rowley Rowley, 4.
  - læviculus Rowley, Rowley, 4.
  - pyramidatus Shumard, Rowley, Greene, 5.
  - superbus n. sp., Rowley, 4.
  - sp. ?, Rowley, Greene, 5.
- Codonites Meek and Worthen, Hambach, 1.
- Codonotheca caduca n. gen. and sp., Sellards, 6.
- Cœlacanthidæ, Eastman, 20.
- Cœlacanthus exiguus n. sp., Eastman, 4, 10.
- Cœlambus cribrarius n. sp., Scudder, 1.
  - derelictus n. sp., Scudder, 1.
  - disjectus n. sp., Scudder, 1.
  - infernalis n. sp., Scudder, 1.
- Cœlidium nom. nov., Clarke and Ruedemann, 1.
  - macrospira Hall (sp.), Clarke and Ruedemann, 1.
  - cf. vitellia Billings, Clarke and Ruedemann, 1.
- Cœlocystis n. gen., Schuchert, 6, 11.
  - subglobosus Hall, Schuchert, 11.
- Cœlodon Carpenter, Dall, 8.
- Cœlodus brownii Cope, Williston, 1.
  - stantoni n. sp., Williston, 1.
- Cœloma bicarinatum n. sp., Ravn, 1.
- Cœlospira grabaui n. sp., Shimer, 5.
- Cœnograptus gracilis (Hall), Weller, 6.
- Coilopoceras n. gen., Hyatt, 1.
  - colleti n. sp., Hyatt, 1.
  - novimexicanum n. sp., Hyatt, 1.
  - springeri n. sp., Hyatt, 1.
- Cqleoides typicalis Walc, Matthew (G. F.), 1.
- Coleolus tenuicinctum Hall, Kindle, 1.
  - tenuistriatus n. sp., Parks, 5.
  - sp., Parks, 5.
- Coleophyllum? greeni n. sp., Rowley, 1.
- Colodon cingulatus n. sp., Douglass, 4.
  - sp., Douglass, 4.
- Colpophyllia gyrosa (Ellis and Solander Vaughan, 2.
- Columbella Lamarck, Arnold, 2.
  - (Astyris) californiana Gaskoin, Arnold, 2.
  - calvertensis n. sp., Martin, 5.
  - (Æsopus) chrysalloidea Carpenter, Arnold, 2.
  - (Astyris) communis (Conrad), Martin, 5.
  - (Astyris) gausapata Gould, Arnold, 2.
  - (Astyris) gausapata Gould, var. carinata Hinds, Arnold, 2.
  - (Anachis) minima n. sp., Arnold, 2.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Columbella (Æsopus) oldroydi n. sp., Arnold, 2.
    - solidula Reeve, var. præcursor n. var. Arnold, 2.
    - (Astyris) tuberosa Carpenter, Arnold, 2.
  - Columbites n. gen., Hyatt and Smith, 1.
    - parisianus n. sp., Hyatt and Smith, 1.
  - Columnaria Goldfuss, Lambe, 2.
    - alveolata Goldfuss, Hayes and Ulrich, 1.
    - alveolata Goldfuss, Lambe, 2.
    - calicina Nicholson, Lambe, 2.
    - disjuncta Whiteaves, Lambe, 2.
    - halli Nicholson, Hayes and Ulrich, 1.
    - halli Nicholson, Lambe, 2.
    - rugosa Billings (sp.), Lambe, 2.
  - Compsemys plicatula, Hay, 23.
  - Comptichnus E. Hitchcock, Lull, 2.
    - obesus E. Hitchcock, Lull, 2.
  - Conchidium knighti (Nettleroth)?, Kindle, 1.
    - laqueatum Conrad, Kindle and Breger, 1.
    - cf. littoni Hall, Kindle and Breger, 1.
    - cf. multicostatum Hall, Kindle and Breger, 1.
    - trilobatum n. sp., Kindle and Breger, 1.
    - unguiformis Ulrich (?), Kindle and Breger, 1.
  - Conchochelys admirabilis n. sp., Hay, 25.
  - Conchopeltis (or Metoptoma) obtusa n. sp., Sardeson, 9.
  - Condylocardia Bernard, Dall, 8.
  - Confervites dubius n. sp., Berry, 4.
  - Coniopteris hymenophylloides (Brongniart) Seward?, Fontaine, 1.
  - Conocardium beecheri n. sp., Raymond (P. E.), 7.
    - cuneus Hall, Kindle, 1.
    - eboraceum Hall, mut. pygmæum nov., Loomis, 4.
    - gowandense n. sp., Clarke, 19.
    - multistriatum n. sp., Kindle and Breger, 1.
    - ohioense Meek, Kindle, 1.
    - oklahomaensis n. sp., Beede, 8.
    - pulchellum W. and W., Weller, 2.
    - oweni n. sp., Kindle and Breger, 1.
    - parrishi Worthen, Beede, 1.
    - sp., Clarke and Ruedemann, 1.
    - sp., Girty, 3.
    - sp. undet., Weller, 6.
  - Constellaria emaciata Ulrich and Bassler, Nickles, 6.
    - florida Ulrich, Nickles, 6.
    - florida var. emaciata Ulrich and Bassler, Hayes and Ulrich, 1.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Constellaria florida var. emaciata n. var., Ulrich and Bassler, 2.
    - prominens Ulrich, Nickles, 6.
    - teres Ulrich and Bassler, Hayes and Ulrich, 1.
    - teres n. sp., Ulrich and Bassler, 2.
  - Conularia Miller, Grabau, 1.
    - crustula White?, Girty, 3.
    - niagarensis Hall, Grabau, 1.
    - triangulata n. sp., Raymond (P. E.), 7.
    - trentonensis Hall, Weller, 6.
    - sp., Kindle, 1.
  - Conus Linné, Arnold, 2.
    - californicus Hinds, Arnold, 2.
    - diluvianus Green, Martin, 5.
    - marylandicus Green, Martin, 5.
    - oweniana n. sp., Anderson, 7.
    - scopularis n. sp., Casey, 4.
    - waltonensis n. sp., Aldrich, 3.
  - Cooperella Carpenter, Arnold, 2.
    - subdiaphana Carpenter, Arnold, 2.
  - Coralliophaga (Oryctomya) bryani Clark, Clark and Martin, 2.
    - coralliophaga Gmelin, Dall, 8.
    - elegantula Dall, Dall, 8.
  - Coralliophila H. and A. Adams, Arnold, 2.
    - cumberlandiana (Gabb), Martin, 5.
    - nux Reeve, Arnold, 2.
  - Corax curvatus n. sp., Williston, 1.
    - falcatus Agassiz, Williston, 1.
  - Corbicula Megerle, Dall, 8.
    - section Corbiculina Dall, Dall, 8.
    - section Cyrenodonax Dall, Dall, 8.
    - section Tellinocyclas Dall, Dall, 8.
    - section Veloritina Meek, Dall, 8.
    - densata Conrad, Dall, 8.
  - Corbiculina Dall, Dall, 8.
  - Corbis Cuvier, Dall, 8.
    - clairbornensis Dall, Dall, 8.
    - undata Conrad, Dall, 8.
  - Corbula (Bruguiére) Lamarck, Arnold, 2.
    - aldrichi Meyer, Clark and Martin, 2.
    - cuneata Say, Glenn, 6.
    - elevata Conrad, Glenn, 6.
    - idonea Conrad, Glenn, 6.
    - inæqualis Say, Glenn, 6.
    - laqueata n. sp., Casey, 4.
    - luteola Carpenter, Arnold, 2.
    - ? maloniana n. sp., Cragin, 2.
    - nematophora var. fitchi n. var., Johnson (D. W.), 5.
    - oniscus Conrad, Clark and Martin, 2.
    - subengonata Dall, Clark and Martin, 2.
    - whitfieldi n. sp., Brown (T. C.), 1.
  - Cordaites Unger, Penhallow, 1.
    - acadianum Dn., Penhallow, 1.
    - ? angustifolius Dn., White (D.), 18.
    - annulatum Dn., Penhallow, 1.

Paleontology—Continued.

Genera and species described—Continued.

- **Cordaites brandlingii, Penhallow, 1.**
  - **clarkii Dn., Penhallow, 1.**
  - **flexuosus Dn., White (D.), 18.**
  - **halli Dn., Penhallow, 1.**
  - **hamiltonense n. sp., Penhallow, 1.**
  - **illinoisense Dn., n. sp., Penhallow, 1.**
  - **materiarium Dn., Penhallow, 1.**
  - **matriode Dn., n. sp., Penhallow, 1.**
  - **newberryi (Dn.), Knowlton, Penhallow, 1.**
  - **ohioense Dn., n. sp., Penhallow, 1.**
  - **pennsylvanicum Dn., n. sp., Penhallow, 1.**
  - **quangondianum Dn., Penhallow, 1.**
  - **recentium Dn., n. sp., Penhallow, 1.**
- **Cordillerites n. gen., Hyatt and Smith, 1.**
  - **angulatus n. sp., Hyatt and Smith, 1.**
- **Cordylocrinus? dubius n. sp., Rowley, 3.**
  - **plumosus (Hall), Talbot, 2.**
- **Corneocyclas (Ferussac), Dall, 8.**
  - **section Corneocyclas s. s., Dall, 8.**
  - **section Cyclocalyx Dall, Dall, 8.**
  - **section Phymesoda Rafinesque, Dall, 8.**
  - **section Pisidium C. Pfeiffer, Dall, 8.**
- **Cornulites, Schlotheim, Grabau, 1.**
  - **arcuatus Conrad, Clarke and Ruedemann, 1.**
  - **bellistriatus Hall, Grabau, 1.**
  - **cingulatus Hall, Weller, 6.**
  - **sp. undet., Weller, 6.**
- **Corvipes E. Hitchcock, Lull, 2.**
  - **lacertoideus E. Hitchcock, Lull, 2.**
- **Corynoides calicularis Nich., Weller, 6.**
- **Corylus harrimani n. sp., Knowlton, 16.**
  - **? palachei n. sp., Knowlton, 16.**
- **Coryphodon testis (Cope), Osborn, 36.**
- **Coscinodiscus apiculatus Ehrenberg, Boyer, 1.**
  - **asteroides Truan and Witt, Boyer, 1.**
  - **heteroporus Ehrenberg, Boyer, 1.**
  - **lewisianus Greville, Boyer, 1.**
  - **lineatus Ehrenberg, Boyer, 1.**
  - **perforatus, Ehrenberg, Boyer, 1.**
- **Cosmacanthus elegans n. sp., Evans (H. M.), 1.**
- **Cosmocrinus ornatissimus Hall, sp., Whitfield, 11.**
- **Cosmonautilus n. gen., Hyatt and Smith, 1.**
  - **dilleri n. sp., Hyatt and Smith, 1.**
- **Cosoryx agilis n. sp., Douglass, 1.**
- **Cossmannella Mayer Eymar, Dall, 8.**
- **Cranæna romingeri Hall, Kindle, 1.**
  - **subelliptica var. hardingensis n. var., Girty, 3.**
  - **Crania ? columbiana Walcott, Matthew (C. F.), 19.**
  - **crenistria Hall, Kindle, 1.**

Paleontology—Continued.

Genera and species described—Continued.

- **Cranæna crenistriata Hall, Raymond (P. E.), 3, 4.**
  - **delicata n. sp. (Rowley), Greene, 2.**
  - **depressa n. sp. (Rowley), Greene, 2.**
  - **granosa Hall and Clarke, Kindle, 1.**
  - **greenei Miller, Kindle, 1.**
  - **halli n. sp., Sardeson, 9.**
  - **? lemoni n. sp. (Rowley), Greene, 2.**
  - **modesta, W. and St. J. sp., Rowley, Greene, 2.**
  - **modesta White and St. John, Beede, 1.**
  - **recta n. sp., Wood (Elvira), 1.**
  - **? reversa n. sp., Sardeson, 1.**
  - **robusta n. sp. (Rowley), Greene, 2.**
  - **sheldoni White, Kindle, 1.**
  - **siluriana Hall 1863, Beecher, 1.**
  - **sp., Kindle, 1.**
  - **sp., Kindle and Breger, 1.**
  - **sp., Clarke and Ruedemann, 1.**
  - **sp. undet., Weller 6.**
- **Craniella hamiltonæ Hall, Kindle, 1.**
- **Cranoceras ? ellipticum n. sp., Rowley, Greene, 2.**
- **Craspedodiscus coscinodiscus Ehrenberg, Boyer, 1.**
  - **elegans Ehrenberg, Boyer, 1.**
- **Crassinella Bayle, Arnold, 2.**
- **Crassinella Guppy, Dall, 8.**
- **Crassatellites Krüger, Dall, 8.**
  - **section Crassatellites s. s., Dall, 8.**
  - **section Scambula Conrad, Dall, 8.**
  - **(Crassinella) acutus n. sp., Dall, 8.**
  - **alæformis (Conrad), Clark and Martin, 2.**
  - **alta (Conrad), Clark and Martin, 2.**
  - **aquiana (Clark), Clark and Martin, 2.**
  - **(Crassinella) bowdenensis n. sp., Dall., 8.**
  - **(Scambula) chipolanus n. sp.?, Dall, 8.**
  - **clarkensis Dall, Dall, 8.**
  - **(Scambula) deformis Heilprin, Dall, 8.**
  - **(Scambula) densus Dall, Dall, 8.**
  - **(Crassinella) duplinianus n. sp., Dall, 8.**
  - **(Crassinella) duplinianus Dall, Glenn, 6.**
  - **(Crassinella) galvestonensis (Harris), Glenn, 6.**
  - **(Crassinella) galvestonensis, Harris, Dall, 8.**
  - **(Scambula) gibbesii Tuomey and Holmes, Dall, 8.**
  - **(Scambula) jamaicensis n. sp., Dall, 8.**
  - **(Crassinella) lunulatus Conrad, Dall, 8.**

Paleontology—Continued.
Genera and species described—Continued.
- Crassatellites (Scambula) marylandicus Conrad, Dall, 8.
  - marylandicus (Conrad), Glenn, 6.
  - melinus (Conrad), Glenn, 6.
  - (Scambula) melinus Conrad var. meridionalis Dall, Dall, 8.
  - (Micromeris) minutissimus Lea, Dall, 8.
  - (Cuna) parvus Lea, Dall, 8.
  - (Scambula) psychopterus Dall, Dall, 8.
  - (Crassinella) tanicus n. sp., Dall, 8.
  - turgidulus (Conrad), Glenn, 6.
  - (Crassinella) triangulatus n. sp., Dall, 8.
  - undulatus var. cyclopterus Dall, Dall, 8.
  - sp., Clark and Martin, 2.
- Cratægus flavescens Newb., Knowlton, 14.
  - imparilis n. sp., Knowlton, 14.
- Crenella gubernatoria n. sp., Glenn, 6.
  - virida n. sp., Glenn, 6.
- Crenimargo, Cossmann, Dall, 8.
- Crenipecten hallanus Walcott, Girty, 3.
- Creodonta, Matthew (W. D.), 19.
- Creosaurus, Osborn, 18.
- Creosaurus Marsh, Williston, 2.
- Crepidophyllum Nicholson and Thompson, Lambe, 2.
  - archiaci Billings (sp.), Lambe, 2.
  - colligatum Billings (sp.), Lambe, 2.
- Crepidula Lamarck, Arnold, 2.
  - aculeata Gmelin, Arnold, 2.
  - adunca Sowerby, Arnold, 2.
  - dorsata Broderip, Arnold, 2.
  - fornicata (Linné), Martin, 5.
  - grandis Middendorff, Arnold, 2.
  - navicelloides Nuttall, Arnold, 2.
  - onyx Sowerby, Arnold, 2.
  - plana Say, Martin, 5.
  - prærupta Conrad, Anderson, 7.
  - precursor n. sp., Dall, 10.
  - rugosa Nuttall, Arnold, 2.
  - ungana n. sp., Dall, 10.
- Crepipora venusta (Ulrich), Nickles, 6.
- Cribrilina crassula n. sp., Ulrich, 2.
  - modesta n. sp., Ulrich, 2.
- Cribroblastus, Hambach, 1.
  - incisus n. sp., Hambach, 1.
  - schucherti n. sp., Hambach, 1.
  - tenuis n. sp., Hambach, 1.
  - tenuistriatus n. sp., Hambach, 1.
  - verrucosus n. sp., Hambach, 1.
- Cricotillus brachydens n. sp., Case, 3.
- Cricotus, Broili, 2.
- Crisina striatopora n. sp., Ulrich and Bassler, 4.
- Cristellaria Lamarck, Bagg, 6.
  - aculeata, Guppy, 4.
  - articulata (Reuss), Bagg, 9.
  - cassis (Fichtel and Moll), Bagg, 9.

Paleontology—Continued.
Genera and species described—Continued.
- Cristellaria crepidula (Fichtel and Moll), Bagg, 9.
  - crepidula (F. and M.) var. gladius Philippi, Bagg, 9.
  - cultrata (Montfort), Bagg, 6.
  - (Robulina) gerlandi Andreae, Bagg, 9.
  - gibba (d'Orbigny), Bagg, 1. 9.
  - radiata (Bornemann), Bagg, 1.
  - rotulata (Lamarck), Bagg, 1. 9.
  - rotulata, Guppy, 4.
  - wetherellii Jones, Bagg, 6.
- Crocodilus humilis Leidy, Lambe, 3.
  - humilis Leidy, Stanton and Hatcher, 1.
  - prenasalis n. sp., Loomis, 5.
- Crossotelos annulatus n. gen. and sp., Case, 3.
- Crossotheca sagittata, Sellards, 3.
  - trisecta n. sp., Sellards, 3.
- Crotalocrinus cora (Hall), Weller, 5.
- Crucibulum Schumacher, Arnold, 2.
  - constrictum Conrad, Martin, 5.
  - costatum (Say), Martin, 5.
  - costatum var. pileolum (H. C. Lea), Martin, 5.
  - multilineatum Conrad, Martin, 5.
  - spinosum, Sowerby, Arnold, 2.
- Cryphæus boothi var. calliteles Green, Loomis, 4.
- Cryptobium cinctum n. sp., Scudder, 1.
  - detectum n. sp., Scudder, 1.
- Cryptoblastus melo O. and S., Rowley, 4.
- Cryptochiton Midd. and Gray, Arnold, 2.
  - stelleri Middendorff, Arnold, 2.
- Cryptodon cfr. unicarinatus Nyst. sp., Ravn, 1.
- Cryptomya Conrad, Arnold, 2.
  - californica Conrad, Arnold, 2.
- Cryptonatica Dall, Arnold, 2.
- Cryptonella lens Hall, Kindle, 1.
  - ovalis Miller, Kindle, 1.
- Cryptozoon? perkinsi n. sp., Seely, 5.
- Ctenacanthus, Eastman, 6.
  - amblyxiphias Cope, Eastman, 10.
  - coxianus St. John and Worthen, Eastman, 6.
  - decussatus n. sp., Eastman, 6.
  - gracillimus N. and W., Eastman, 6.
  - longinodosus n. sp., Eastman, 6.
  - lucasi n. sp., Eastman, 6.
  - semicostatus St. John and Worthen, Eastman, 6.
  - solidus n. sp., Eastman, 6.
  - spectabilis St. John and Worthen, Eastman, 6.
  - varians St. John and Worthen, Eastman, 6.
  - venustus n. sp., Eastman, 6.
  - sp. indet., Eastman, 6.
- Ctenichnites bisulcatus n. sp., Matthew (G. F.), 20.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Ctenis auriculata Fontaine?, Fontaine, 1.
    - grandifolia Fontaine, Fontaine, 1.
    - orovillensis Fontaine, Fontaine, 1.
    - sulcicaulis (Phillips) Ward n. comb., Fontaine, 1, 2.
  - Ctenobolbina ciliata, Ruedemann, 1.
    - ciliata var. cornula n. var., Ruedemann, 1.
    - subrotunda n. sp., Ruedemann, 1.
  - Ctenodonta cf. astartæformis Salter, Ruedemann, 2.
    - dubiaformis n. sp., Raymond (P. E.), 7.
    - jerseyensis n. sp., Weller, 6.
    - levata (Hall), Weller, 6.
    - limbata n. sp., Raymond (P. E.), 7.
    - nasuta (Hall), Weller, 6.
    - parvidens n. sp., Raymond (P. E.), 7.
    - peracuta n. sp., Raymond (P. E.), 7.
    - subovata n. sp., Whiteaves, 17.
    - subrotunda Ulrich, Hayes and Ulrich, 1.
  - Ctenophyllum angustifolium Fontaine, Fontaine, 1.
    - latifolium Fontaine?, Fontaine, 3.
    - pachynerve n. sp., Fontaine, 1.
    - wardii Fontaine, Fontaine, 1.
    - ? n. sp.?, Fontaine, 2.
  - Ctenopteris columbiensis n. sp., Penhallow, 4.
    - insignis Fontaine?, Fontaine, 5.
    - integrifolia Fontaine?, Fontaine, 3.
  - Ctenoptychius occidentalis (St. John and Worthen), Eastman, 10.
  - Ctenopyge pecten Salter, Matthew (G. F.), 20.
  - Cucullæa castilloi n. sp., Cragin, 2.
    - catorcensis Castillo and Aguilera, Cragin, 2.
    - gigantea Conrad, Clark and Martin, 2.
    - ? texticostata n. sp., Cragin, 2.
    - transpecosensis Cragin, Cragin, 2.
    - truncata? Gabb, var., Whiteaves, 12.
    - sp., Shattuck, 8.
  - Cucumites lesquereuxii n. sp., Knowlton, 11.
    - lesquereuxii Kn., Perkins, 13.
  - Cumingia Sowerby, Arnold, 2.
    - californica Conrad, Arnold, 2.
    - medialis Conrad, Glenn, 6.
  - Cuna Hedley, Dall, 8.
  - Cuneamya truncatula Ulr., Weller, 6.
  - Cunichnoides E. Hitchcock, Lull, 2.
    - marsupialoideus E. Hitchcock, Lull, 2.
  - Cunninghamites elegans (Corda) Endlicher, Knowlton, 18.
    - elegans (Corda) Endl., Hollick, 4.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Cunninghamites elegans (Corda), Endl., Berry, 7.
    - pulchellus n. sp., Knowlton, 18.
    - recurvatus? Hosius and von der Marck, Knowlton, 18.
    - squamosus Heer, Berry, 4, 5.
  - Cupressinoxylon cheyennense n. sp., Penhallow, 1.
    - comanchense n. sp., Penhallow, 1.
  - Cupressoxylon dawsoni n. sp., Penhallow, 5, 6.
    - macrocarpoides n. sp., Penhallow, 6.
  - Cupularia denticulata (?) (Conrad), Ulrich and Bassler, 4.
  - Cursipes n. gen., Matthew (G. F.), 21, 30.
    - dawsoni n. sp., Matthew (G. F.), 21, 30.
    - levis n. sp., Matthew (G. F.), 30.
  - Curticia n. gen., Walcott, 12.
    - elegantula n. sp., Walcott, 12.
  - Cuspidaria Nardo, Dall, 8.
    - (Cardiomya) craspedonia n. sp., Dall, 8.
    - (Bowdenia) distira n. sp., Dall, 8.
    - (Cardiomya) ornatissima Orbigny, Dall, 8.
    - suciensis n. sp., Whiteaves, 12.
  - Cyanocyclas Férussac, Dall, 8.
  - Cyathaxonia venusta n. n., Greene, 14.
  - Cyathocrinus formosus n. sp., Rowley, 4.
    - granulosus n. sp., Rowley, 2.
    - ornatissimus Hall, sp., Whitfield, 11.
    - ? ovalis n. sp., Rowley, 3.
    - snivelyi n. sp., Rowley, 2.
  - Cyathodonta Conrad, Dall, 8.
    - guadalupensis n. sp., Dall, 8.
    - semirugosa Reeve, Dall, 8.
    - spenceri, n. sp., Dall, 8.
    - vicksburgiana n. sp., Dall, 8.
  - Cyathophyllum Goldfuss, Lambe, 2.
    - anna Whitfield (sp.), Lambe, 2.
    - anticostiense Billings, Lambe, 2.
    - articulatum Wahlenberg, Lambe, 2.
    - athabascense Whiteaves, Lambe, 2.
    - cæspitosum Goldfuss, Lambe, 2.
    - capax n. sp., Herzer, 5.
    - ceratites Goldfuss, Lambe, 2.
    - coalitum Rominger, Lambe, 2.
    - dawsoni Lambe, Lambe, 2.
    - ellipticum Hall and Whitfield (sp.), Lambe, 2.
    - euryone Billings, Lambe, 2.
    - exiguum Billings (sp.), Lambe, 2.
    - glabrum Keyes, Sardeson, 11.
    - halli Milne Edwards and Haime (sp.), Lambe, 2.
    - interruptum Billings, Lambe, 2.
    - parvulum Whiteaves (sp.), Lambe, 2.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Cyathophyllum pasithea Billings, Lambe, 2.
    - pennanti Billings, Lambe, 2.
    - petraloides Whiteaves, Lambe, 2.
    - quadrigeminum Goldfuss, Lambe, 2.
    - richardsoni Meek (sp.), Lambe, 2.
    - spenceri Lambe, Lambe, 2.
    - tenuiseptatum Billings (sp.), Lambe, 2.
    - thoroldense n. sp., Lambe, 2.
    - vermiculare Goldfuss, var. præcursor Frech, Lambe, 2.
    - wahlenbergi Billings, Lambe, 2.
    - waskasense Whiteaves, Lambe, 2.
    - zenkeri Billings, Lambe, 2.
  - Cybele valcourensis n. sp., Raymond (P. E.), 5.
    - sp., Ruedemann, 2.
  - Cycadella, Wieland, 9.
    - beecheriana Ward, Ward (L. F.), 5.
    - cirrata Ward, Ward (L. F.), 5.
    - compressa Ward, Ward (L. F.), 5.
    - contracta Ward, Ward (L. F.), 5.
    - crepidaria Ward, Ward (L. F.), 5.
    - exogena Ward, Ward (L. F.), 5.
    - ferruginea Ward, Ward (L. F.), 5.
    - knightii Ward, Ward (L. F.), 5.
    - knowltoniana Ward, Ward (L. F.), 5.
    - jejuna Ward, Ward (L. F.), 5.
    - jurassica Ward, Ward (L. F.), 5.
    - nodosa Ward, Ward (L. F.), 5.
    - ramentosa Ward, Ward (L. F.), 5.
    - reedii Ward, Ward (L. F.), 5.
    - wyomingensis Ward, Ward (L. F.), 5.
  - Cicadeoidea bibbinsi Ward, Ward (L. F.), 5.
    - clarkiana n. sp., Ward (L. F.), 5.
    - fisheræ n. sp., Ward (L. F.), 5.
    - fontaineana Ward, Ward (L. F.), 5.
    - goucheriana Ward, Ward (L. F.), 5.
    - marylandica (Fontaine), Capellini and Solms-Laubach, Ward (L. F.), 5.
    - mcgeeana Ward, Ward (L. F.), 5.
    - stantoni n. sp., Ward (L. F.), 5.
    - tysoniana Ward, Ward (L. F.), 5.
    - uhleri Ward, Ward (L. F.), 5.
  - Cycadeospermum californicum n. sp., Fontaine, 3.
    - montanense n. sp., Fontaine, 4.
    - obovatum Fontaine, Fontaine, 5.
    - oregonense n. sp., Fontaine, 1.
    - ovatum n. sp., Fontaine, 1.
  - Cycadites sp., Penhallow, 4.
  - Cyclamina deformis, Guppy, 4.
  - Cyclas (Bruguière) Link, Dall, 8.
  - Cyclina Deshayes, Dall, 8.
  - Cyclinella Dall, Dall, 8.
    - cyclica Guppy, Dall, 8.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Cyclinella gatunensis n. sp., Dall, 8.
    - tenuis Récluz, Dall, 8.
  - Cyclocalyx Dall, Dall, 8.
  - Cyclocardia Conrad, Dall, 8.
  - Cyclonema cancellata Hall, Kindle and Breger, 1.
    - cancellata, Kindle, 1.
    - crenulata Meek, Kindle, 1.
    - elevata Hall, Kindle and Breger, 1.
    - montrealensis Bill., Weller, 6.
    - ? normaliana n. sp., Raymond (P. E.), 7.
    - varicosum Hall, Hayes and Ulrich, 1.
  - Cyclopitys oregonensis n. sp., Fontaine, 1.
  - Cyclorhina nobilis Hall, Kindle, 1.
  - Cyclotrypa Ulrich, Condra, 2.
    - ? barberi Ulrich n. sp., Condra, 1, 2.
    - borealis n. sp., Parks, 5.
  - Cyclus De Koninck, Rogers, 3.
    - communis n. sp., Rogers, 3.
    - limbatus n. sp., Rogers, 3.
    - minutus n. sp., Rogers, 3.
    - packardi n. sp., Rogers, 3.
    - permarginatus n. sp., Rogers, 3.
  - Cylichna Loven, Arnold, 2.
    - alba Brown, Arnold, 2.
    - calvertensis n. sp., Martin, 5.
    - costata Gabb, Whiteaves, 12.
    - ? greensboroensis n. sp., Martin, 5.
    - oriza Stimpson, Sears, 1.
    - venusta Clark, Clark and Martin, 2.
  - Cylindrodon fontis n. gen. and sp., Douglass, 4.
  - Cylindrodon fontis Douglas, Matthew (W. D.), 9.
  - Cymatocyclas Dall, Dall, 8.
  - Cymbiodyta extincta n. sp., Scudder, 1.
  - Cymbophora ashburneri Gabb, Whiteaves, 12.
  - Cymbospondylus (?) grandis Leidy, Merriam (J. C.), 4.
    - petrinus Leidy, Merriam (J. C.), 4.
    - petrinus Leidy (?), Merriam (J. C.), 14.
    - piscosus Leidy, Merriam (J. C.), 4.
  - Cynarctus n. gen., Matthew (W. D.), 5.
    - saxatilis n. sp., Matthew (W. D.), 5.
  - Cynocercus incisus Cope, Hay, 24.
  - Cynodictis gregarius (Cope), Matthew (W. D.), 2.
    - paterculus n. sp., Matthew (W. D.), 9.
  - Cynodontomys latidens Cope, Osborn, 11.
  - Cynognathus, Case, 6.
  - Cyon or Icticyon sp., Matthew (W. D.), 5.
  - Cyperacites sp., Knowlton, 18.
    - sp., Knowlton, 14.

Paleontology—Continued.
Genera and species described—Continued.
Cyphaspis hudsonica n. sp., Ruedemann, 2.
  matutina n. sp., Ruedemann, 2.
  trentonensis n. sp., Weller, 6.
Cyphotrypa n. gen., Ulrich and Bassler, 2.
  acervulosa (Ulrich), Ulrich and Bassler, 2.
  frankfortensis n. sp., Ulrich and Bassler, 2.
  wilmingtonensis n. sp., Ulrich and Bassler, 2.
Cypræa Linné, Arnold, 2.
  fresnoensis n. sp., Anderson, 7.
  nuculoides n. sp., Aldrich, 2.
  smithii Aldrich, Clark and Martin, 2.
  spadicea Gray, Arnold, 2.
  suciensis Whiteaves, Whiteaves, 12.
  sp., Shattuck, 8.
Cypricardinia? **carbonaria** Meek, Beede, 1.
  carbonaria Meek, Girty, 3.
  cataracta Conrad, Kindle, 1.
  ? **cylindrica** H. and W., Kindle, 1.
  indenta Conrad, Kindle, 1.
  sublamellosa Hall, Weller, 6.
  sp., Kindle and Breger, 1.
Cypricardites descriptus n. sp., Sardeson, 1.
  dignus n. sp., Sardeson, 1.
  finitimus n. sp., Sardeson, 1.
  (**Vanuxemia**) **fragosus** n. sp., Sardeson, 1.
  luculentus n. sp., Sardeson, 9.
  minnesotensis n. sp., Sardeson, 9.
  triangularis n. sp., Sardeson, 9.
  vicinus n. sp., Sardeson, 9.
Cypridina antiqua n. sp., Jones (T. R.), 3.
Cyprimeria Conrad, Dall, 8.
  lens Whiteaves, Whiteaves, 12.
  ? **sulcata** n. sp., Johnson (D. W.), 5.
Cyprina? **anthracicola** n. sp., Whiteaves, 12.
  coteroi Castillo and Aguilera, Cragin, 2.
  denmanensis n. sp., Whiteaves, 12.
  ? **streeruvitzii** Cragin, Cragin, 2.
  sp., Ravn, 1.
Cyrena Lamarck, Dall, 8.
  section Cyrena s. s., Dall, 8.
  section Egetaria Mörch, Dall, 8.
  section Geloina Gray, Dall, 8.
  section Isodoma (Deshayes) Cossmann, Dall, 8.
  section Polymesoda Rafinesque, Dall, 8.
  albertensis n. sp., Whiteaves, 6.
  (**Corbicula**) **dumblei** n. sp., Anderson, 7.
  (**Pseudocyrena**) **duplinlana** n. sp., Dall, 8.
Cyrena (**Pseudocyrena**) **floridana** Conrad, Dall, 8.
  gravesi Deshayes, Ravn, 1.
  pompholyx Dall, Dall, 8.
Cyrenastrum Bourguignat, Dall, 8.
Cyrenodonax Dall, Dall, 8.
Cyrenoida Joannis, Dall, 8.
  caloosaënsis Dall, Dall, 8.
Cyrtia myrtia Billings, Kindle and Breger, 1.
Cyrtina Davidson, Grabau, 1.
  acutirostris (Shum.)?, Weller, 2.
  crassa Hall, Kindle, 1.
  hamiltonensis Hall, Raymond (P. E.), 3, 4.
  hamiltonensis Hall, Weller, 6.
  hamiltonensis Hall, Kindle, 1.
  var. recta Hall, Kindle, 1.
  hamiltonensis Hall, mut. **pygmæa** nov., Loomis, 4.
  magnaplicata n. sp., Weller, 6.
  pyramidalis (Hall), Grabau, 1.
  rostrata Hall, Weller, 6.
  varia Clarke, Weller, 6.
  sp. undet., Weller, 6.
Cyrtoceras Goldfuss, Grabau, 1.
  arcticameratum Hall, Clarke and Ruedemann, 1.
  bovinum n. sp., Clarke and Ruedemann, 1.
  cf. **brevicorne** Hall, Clarke and Ruedemann, 1.
  columbiense n. sp., Herzer, 5.
  crescens n. sp., Herzer, 5.
  dresbachense n. sp., Sardeson, 2.
  expansum n. sp., Kindle, 1.
  gracilis n. sp., Cleland, 3.
  orodes Billings, Clarke and Ruedemann, 1.
  subcancellatum Hall, Grabau, 1.
  ? **winonicum** n. sp., Sardeson, 2.
  sp., Kindle, 1.
  sp. undet., Weller, 6.
Cyrtodonta billingsi Ulr., Weller, 6.
  canadensis Bill., Weller, 6.
  ? **lamellosa** n. sp., Hudson, 1.
  solitaria n. sp., Raymond (P. E.), 7.
  tranceps n. sp., Raymond (P. E.), 7.
Cyrtolites bennetti n. sp., Rowley, 1.
  ornatus var. minor U. & S. Weller, 6.
  sinuatus H. & W., Weller, 6.
Cyrtonella mitella Hall, Weller, 6.
Cyrtorhizoceras curvicameratum n. sp., Clarke and Ruedemann, 1.
Cyrtospira attenuata n. sp., Ruedemann, 2.
Cystelasma quinqueseptatum n. sp., Ulrich, 8.
  septata n. sp., Greene, 2.
Cystiphycus latifrons n. sp., Herzer, 2.
Cysthiphyllum Goldfuss, Grabau, 1.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Cystiphyllum Lonsdale, Lambe, 2.
    - aggregatum Billings, Lambe, 2.
    - basalis n. sp., Herzer, 5.
    - clavatum n. sp., Greene, 12.
    - conspicuum n. sp., Greene, 15.
    - crenatum n. sp., Greene, 15.
    - discoideum n. sp., Herzer, 5.
    - diversum n. sp., Greene, 1.
    - expansum n. sp.; Greene, 1.
    - fulcratum n. sp., Greene, 12.
    - gemmiferum n. sp., Greene, 15.
    - hydraulicum Simpson, Grabau, 1.
    - louisvillensis n. sp., Greene, 1.
    - maritimum Billings, Lambe, 2.
    - multicrenatum n. sp., Greene, 2.
    - niagarense Hall (sp.), Lambe, 2.
    - perlamellosum n. sp., Herzer, 5.
    - prostratum n. sp., Herzer, 5.
    - retrorsum n. sp., Herzer, 5.
    - scyphus n. sp., Herzer, 5.
    - sulcatum Billings, Lambe, 2.
    - vesiculosum Goldfuss (sp.), Lambe, 2.
    - vesiculosum Phillips, Greene, 15.
  - Cystodictya Ulrich, Condra, 2.
    - anisopora n. sp., Condra, 1, 2.
    - inequamarginata Rogers, Condra, 2.
    - lophodes n. sp., Condra, 1, 2.
  - Cythara Schumacher, Arnold, 2.
  - Cythere burnsi n. sp., Ulrich and Bassler, 3.
    - calverti n. sp.?, Ulrich and Bassler, 3.
    - clarkana n. sp., Ulrich and Bassler, 3.
    - clarkana var. minuscula n. var., Ulrich and Bassler, 3.
    - dorsicornis n. sp., Ulrich and Bassler, 3.
    - dorsicornis var. bicornis n. var. Ulrich and Bassler, 3.
    - evax n. sp., Ulrich and Bassler, 3.
    - evax var. oblongula n. var., Ulrich and Bassler, 3.
    - exanthemata n. sp., Ulrich and Bassler, 3.
    - francisca n. sp., Ulrich and Bassler, 3.
    - inæquivalvis n. sp., Ulrich and Bassler, 3.
    - lienenklausi n. sp., Ulrich and Bassler, 3.
    - martini n. sp., Ulrich and Bassler, 3.
    - marylandica n. sp., Ulrich, 1.
    - micula n. sp., Ulrich and Bassler, 3.
    - nitidula n. sp., Ulrich and Bassler, 3.
    - nitidula var. calvertensis n. var., Ulrich and Bassler, 3.
    - paucipunctata n. sp., Ulrich and Bassler, 3.
    - planibasalis n. sp., Ulrich and Bassler, 3.
    - plebeia n. sp., Ulrich and Bassler, 3.
    - plebeia var. capax n. var., Ulrich and Bassler, 3.
    - plebeia var. modica n. var., Ulrich and Bassler, 3.
    - porcella n. sp., Ulrich and Bassler, 3.
    - producta n. sp., Ulrich and Bassler, 3.
    - punctistriata n. sp., Ulrich and Bassler, 3.
    - rugipunctata n. sp., Ulrich and Bassler, 3.
    - ? shattucki n. sp., Ulrich and Bassler, 3.
    - spiniplicata n. sp., Ulrich and Bassler, 3.
    - subovalis n. sp., Ulrich and Bassler, 3.
    - tuomeyi n. sp., Ulrich and Bassler, 3.
    - vaughani n. sp., Ulrich and Bassler, 3.
  - Cytherea Bolten, Dall, 8.
    - section Antigona, s. s., Dall, 8.
    - section Artena Conrad, Dall, 8.
    - section Clausina Brown, Dall, 8.
    - section Ventricola Römer, Dall, 8.
    - cæsarina n. sp., Dall, 8.
    - (Ventricola) blandiana Guppy, Dall, 8.
    - (Callista) diabloensis n. sp., Anderson, 7.
    - (Artena) glyptoconcha n. sp., Dall, 8.
    - (Artena) shepardi n. sp., Dall, 8.
    - (Artena) staminea Conrad, Dall, 8.
    - (Antigona) staminea Conrad, Glenn, 6.
    - tarquinia Dall, Dall, 8.
    - (Ventricola) ucuttana n. sp., Dall, 8.
    - (Artena) undulata Conrad, Dall, 8.
    - willcoxi n. sp., Dall, 8.
  - Cythereis alaris n. sp., Ulrich and Bassler, 3.
    - bassleri n. sp., Ulrich, 1.
    - cornuta var. americana n. var., Ulrich and Bassler, 3
  - Cytherella marlborensis n. sp., Ulrich, 1.
    - submarginata n. sp., Ulrich, 1.
  - Cytheridea? chesapeakensis n. sp., Ulrich and Bassler, 3.
    - perarcuata n. sp., Ulrich, 1.
    - subovata n. sp., Ulrich and Bassler, 3.
  - Cytherideis ashermani n. sp., Ulrich and Bassler, 3.
    - cylindrica n. sp., Ulrich and Bassler, 3.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Cytherideis longula n. sp., Ulrich and Bassler, 3.
    - semicircularis n. sp., Ulrich and Bassler, 3.
    - subæqualis n. sp., Ulrich and Bassler, 3.
  - Cytheropteron nodosum n. sp., Ulrich and Bassler, 3.
  - Dacentrurus nov. nom., Lucas, 11.
  - Dadoxylon antiquum Dn., Penhallow, 1.
    - edvardanum Dn., Penhallow, 1.
    - prosseri n. sp., Penhallow, 1.
  - Dædalus Rouait, Sarle, 4.
  - Dæmonelix, Peterson, 3.
  - Dæmonelix, Jennings (O. E.), 1.
  - Dalmanella Hall and Clarke, Grabau, 1.
    - elegantula Dalman, Kindle and Breger, 1.
    - elegantula Dalman, Grabau, 1.
    - elegantula Dalman 1827, Beecher, 1.
    - cf. elegantula Dalman (sp.), Clarke and Ruedemann, 1.
    - cf. hybrida Sowerby (sp.), Clarke and Ruedemann, 1.
    - perelegans (Hall), Weller, 6.
    - postelegantula n. sp., Weller, 6.
    - subæquata (Con.), Weller, 6.
    - subæquata var. parvetus Conrad, Ruedemann, 2.
    - subcarinata (Hall), Weller, 6.
    - testudinaria (Dal.), Weller, 6.
    - wemplei Cleland, Weller, 6.
  - Dalmanites Barrande, Grabau, 1.
    - achates Billings, Ruedemann, 2.
    - (Odontocephalus) ægeria Hall, Kindle, 1.
    - (Chasmops) anchiops (Green), Kindle, 1.
    - (Synphoria) arkansanus n. sp., Van Ingen, 2.
    - aspinosa n. sp., Weller, 6.
    - (Cryphæus) boothi var., calliteles Green (H. and C.), Kindle, 1.
    - (Chasmops) calypso H. and W., Kindle, 1.
    - dentatus Barrett, Weller, 6.
    - electra (Bill.), Weller, 6.
    - limulurus (Green), Grabau, 1.
    - lunatus n. sp., Lambert, 1, 2.
    - (Cryphæus) pleione Hall and Clarke, Kindle, 1.
    - pleuroptyx (Green), Weller, 6.
    - (Hausmannia) pleuroptyx Green (Hall?), Kindle, 1.
    - (Odontocephalus) selenurus (Hall and Clarke), Kindle, 1.
    - (Synphoria) vigilans Hall, Kindle and Breger, 1.
    - (Synphoria) vigilans Hall, Van Ingen, 2.
    - sp. cf. anchiops (Green), Weller, 6.
    - sp. undet. Weller, 6.
  - Dammara acicularis n. sp., Knowlton, 18.
  - Dammara borealis Heer, Hollick, 4.
    - cliffwoodensis, Hollick, Berry, 5 7.
    - northportensis n. sp., Hollick, 11.
  - Danæopsis storrsii n. sp., Fontaine, 1.
  - Danubites Mojsisovics, Hyatt and Smith, 1.
    - strongi n. sp., Hyatt and Smith, 1.
  - Daonella Mojsisovics, Smith (J. P.), 5.
    - dubia Gabb, Smith (J. P.), 5.
  - Daphœnus Leidy, Hatcher, 10.
    - dodgei Scott, Hatcher, 10.
    - felinus Scott, Hatcher, 10.
  - Dawsonia Nicholson, Ruedemann, 8.
    - monodon Gurley, Ruedemann, 8.
    - tridens Gurley, Ruedemann, 8.
  - Dawsonoceras annulatum Sowerby var. americanum Foord, Clarke and Ruedemann, 1.
  - Deinodon Leidy, Osborn, 50.
  - Deinodon Leidy, Stanton and Hatcher, 1.
    - explanatus Cope (sp.) Lambe, 3.
    - horridus Leidy, Lambe, 3.
    - Dekayella, Cumings, 7.
  - Dekayella Ulrich, Ulrich and Bassler, 2.
    - foliacea n. sp., Ulrich and Bassler, 2.
    - trentonensis (Ulrich), Nickles, 6.
    - ulrichi (Nicholson), Nickles, 6.
  - Dekayia, Cumings, 7.
  - Dekayia Edwards and Haime, Ulrich and Bassler, 2.
    - aspera Edwards and Haime, Nickles, 6.
    - cystata n. sp., Cumings, 3.
    - magna n. sp., Cumings, 3.
    - perfrondosa n. n.., Cumings, 7.
    - subfrondosa n. sp., Cumings, 7.
    - ulrichi-lobata n. var., Cumings, 7.
  - Delphinodon Leidy, Case, 9.
    - leidyi (Hay), Case 9.
    - mento Cope, Case, 9.
  - Delphinoidea Brown, Arnold, 2.
    - coronadoensis n. sp., Arnold, 2.
  - Delphinosaurus, Merriam (J. C.), 13.
    - perrini, Merriam (J. C.), 13.
  - Delphinula stantoni n. sp., Cragin, 2.
  - Delthyris consobrinus d'Orbigny, Raymond (P. E.), 3, 4.
    - raricosta Conrad, Kindle, 1.
    - sculptilis Hall, Kindle, 1.
  - Deltodus Newberry and Worthen, Branson, 1.
    - angularis Newberry and Worthen, Eastman, 10.
    - attenuatus n. sp., Branson, 1.
    - contortus (St. John and Worthen), Eastman, 10.
    - costatus (Newberry and Worthen), Eastman, 10.
    - occidentalis (Leidy), Eastman, 10.
    - spatulatus Newberry and Worthen, Eastman, 10.

Paleontology—Continued.

Genera and species described—Continued.

- Deltodus spatulatus Newberry and Worthen, Branson, 1.
- Dendrograptus Hall, Ruedemann, 8.
  - flexuosus Hall, Ruedemann, 8.
  - flultans n. sp., Ruedemann, 8.
  - ? succulentus n. sp., Ruedemann, 8.
- Dentalium Linné, Arnold, 2.
  - attenuatum Say, Martin, 5.
  - caduloide Dall, Martin, 5.
  - danai Meyer, Martin, 5.
  - grandævum Win., Weller, 2.
  - hexagonum Sowerby, Arnold, 2.
  - indianorum Carpenter, Arnold, 2.
  - minutistriatum Gabb, Clark and Martin, 2.
  - mississippiensis Gabb, Clark and Martin, 2.
  - opaculum n. sp., Casey, 4.
  - polygonum n. sp., Casey, 4.
  - pseudohexagonum Dall, Arnold, 2.
  - semipolitum Broderip and Sowerby, Arnold, 2.
  - strenuum n. sp., Casey, 4.
  - sublæve Hall, Girty, 3.
  - zephyrinum n. sp., Casey, 4.
  - sp., Dall, 10.
  - sp., Girty, 3.
- Derbya Waagen, Beede, 1.
  - bennetti Hall and Clarke, Beede, 1.
  - crassa (Meek and Hayden), Beede, 1.
  - crassa Meek and Hayden, Girty, 3.
  - cymbula Hall and Clarke, Beede, 1.
  - keokuk (Hall), Beede, 1.
- Desmoceras ashlandicum n. sp., Anderson, 3.
  - colusaense n. sp., Anderson, 3.
  - dilleri n. sp., Anderson, 3.
  - hoffmanii, Smith (W. D.), 1.
  - hoffmanni Gabb, Anderson, 3.
  - jugalis Gabb, Anderson, 3.
  - lecontei n. sp., Anderson, 3.
  - selwynianum Whiteaves, Whiteaves, 12.
  - subquadratum n. sp., Anderson, 3.
  - sugatum Forbes, Anderson, 3.
  - voyi n. sp., Anderson, 3.
- Desmograptus Hopkinson, Ruedemann, 8.
  - cancellatus Hopk. (sp.), Ruedemann, 8.
  - intricatus n. sp., Ruedemann, 8.
- Dewalquea grœnlandica Heer, Berry, 5.
- Dexiobia halli Win., Weller, 2.
  - ovata (Hall), Weller, 2.
- Diacranodus texensis Cope, Broili, 3.
- Diadectidæ Cope, Case, 12.
- Diamesopora Hall, Grabau, 1.
  - dichotoma Hall, Grabau, 1.
- Diaphorostoma Fischer, Grabau, 1.
  - desmatum Clarke, Shimer, 5.
  - lineatum Conrad, mut. bellai Clarke, Loomis, 4.

Paleontology—Continued.

Genera and species described—Continued.

- Diaphorostoma niagarense Hall, Grabau, 1.
  - niagarense Hall (sp.), Clarke and Ruedemann, 1.
  - perforatum n. sp., Whiteaves, 17.
  - pugnus n. sp., Clarke, 19.
  - (Naticopsis) rotundatum n. sp., Clarke, 19.
- Diastoma Deshayes, Arnold, 2.
  - sp. indet., Arnold, 2.
- Diatryma gigantea, Lucas, 15.
- Dicellomus Hall, Walcott, 12.
  - appalachia n. sp., Walcott, 12.
  - nanus Meek and Hayden, Walcott, 12.
  - parvus n. sp., Walcott, 12.
  - pectenoides Whitfield, Walcott, 12.
  - politus Hall, Walcott, 12.
  - sp. und., Walcott, 12.
- Diceratops Lull, Lull, 7.
- Diceratops hatcheri Lull, n. gen. and sp., Hatcher, 22.
- Dichocrinus inoratus Wachsmuth and Springer, Grabau, 8.
- Dichograptus Salter, Ruedemann, 8.
  - octobrachiatus Hall (sp.), Ruedemann, 8.
- Dicksonia montanensis n. sp., Fontaine, 4.
  - oregonensis n. sp., Fontaine, 1, 2.
  - pachyphylla n. sp., Fontaine, 3, 4.
  - saportana Heer, Fontaine, 2.
- Dicranograptus ramosus (Hall), Weller, 6.
- Dictyocephalus Leidy, Branson, 2.
- Dictyocoryne profunda Ehrenberg, Martin, 8.
- Dictyomella Hall, Grabau, 1.
  - corallifera Hall, Grabau, 1.
- Dictyonella reticulata Hall 1868, Beecher, 1.
- Dictyonema Hall, Grabau, 1.
- Dictyonema Hall, Ruedemann, 8.
  - flabelliforme Eichwald (sp.), Ruedemann, 8.
  - furciferum n. sp., Ruedemann, 8.
  - murrayi Hall, Ruedemann, 8.
  - rectilineatum n. sp., Ruedemann, 8.
  - retiforme Hall, Grabau, 1.
- Dictyopyge Egerton, Eastman, 20.
  - macrura W. C. Redfield, Eastman, 20.
- Dictyoretmon n. gen., Whitfield, 8.
  - burlingtonense n. sp., Whitfield, 8.
- Didymograptus McCoy, Ruedemann, 8.
  - acutidens Lapworth ms., Elles and Wood em., Ruedemann, 8.
  - bifidus Hall sp., Ruedemann, 8.
  - (Isograptus) caduceus Salter em. Ruedemann, Ruedemann, 8.
  - caduceus Salter nanus n. mut., Ruedemann, 8.
  - cuspidatus n. sp., Ruedemann, 8.
  - ellesi n. sp., Ruedemann, 8.
  - extensus Hall sp., Ruedemann, 8.

Paleontology—Continued.
Genera and species described—Continued.
Didymograptus gracilis Törnquist, Ruedemann, 8.
  filiformis Tullberg, Ruedemann, 8.
  forcipiformis n. sp., Ruedemann, 8.
  incertus n. sp., Ruedemann, 8.
  nanus Lapworth, Ruedemann, 8.
  nicholsoni Lapworth var. planus Elles and Wood, Ruedemann, 8.
  nitidus Hall sp., Ruedemann, 8.
  patulus Hall sp., Ruedemann, 8.
  similis Hall sp., Ruedemann, 8.
  spinosus n. sp., Ruedemann, 8.
  törnquisti n. sp., Ruedemann, 8.
Dielasma, Beecher, 1.
  bovidens (Morton), Beede, 1.
  bovidens Morton?, Girty, 3.
  ? pediculus n. sp., Rowley, 1.
  schucherti n. sp., Beede, 8.
  zellei (Win.), Weller, 2.
Dieneria n. gen., Hyatt and Smith, 1.
  arthaberi n. sp., Hyatt and Smith, 1.
Digitaria Wood, Dall, 8.
Dikelocephalus minnesotensis Owen, Sardeson, 2.
  newtonensis n. sp., Weller, 6.
Dimeripteris incerta (Dn.) D. W., White (D.), 18.
  recurva (Dn.) D. W., White (D.), 18.
Dimetrodon, Sternberg, 2.
Dimetrodon, Case, 7, 8, 11.
  gigas Cope, Case, 7, 11.
  incisivus Cope, Broili, 2.
  incisivus Cope, Case, 7, 11.
  sp. near incisivus Cope, Case, 11.
Dimorphoceras Hyatt, Smith (J. P.), 3.
  texanum n. sp., Smith (J. P.), 3.
Dinarites Mojsisovics, Hyatt and Smith, 1.
  bonæ-vistæ n. sp., Hyatt and Smith, 1.
Dinichthys, Clark (W.), 1.
Dinichthys, Wright (A. A.), 1.
  clarki Claypole, Hussakof, 2.
  curtus Newb., Hussakof, 2.
  intermedius Newb., Hussakof, 1.
  pustulosus, Eastman, 8.
Dinictis, Matthew (W. D.), 19.
  bombifrons Adams, Matthew (W. D.), 2.
  fortis Adams, Matthew (W. D.), 2.
  squalidens Cope, Matthew (W. D.), 2.
Dinobolus conradi Hall, Kindle and Breger, 1.
Dinochœrus hollandi n. gen. and sp., Peterson, 4.
Dinocyon (Borophagus) diversidens (Cope), Matthew (W. D.), 5.
  (? Borophagus) gidleyi n. sp., Matthew (W. D.), 3.
  (Borophagus) mæandrinus (Hatcher), Matthew (W. D.), 5.
  ossifragus n. sp., Douglass, 8.

Paleontology—Continued.
Genera and species described—Continued.
Dinonyus (n. n.), for Dinochœrus, Peterson, 5.
Dinorthis pectinella (Emm.), Weller, 6.
  subquadrata (Hall), Hayes and Ulrich, 1.
Dioonites buchianus (Ettingshausen) Bornemann, Fontaine, 3, 5.
  buchianus abietinus (Göppert) Ward n. comb., Fontaine, 3, 5.
  buchianus rarinervis Fontaine?, Fontaine, 3.
  dunkerianus (Göppert) Miquel, Fontaine, 3.
Diopeus leptocephalus, Case, 6.
Diospyros elliptica n. sp., Knowlton, 14.
  judithæ n. sp., Knowlton, 18.
  primæva Heer, Berry, 6.
Diphyodus longirostris n. sp., Lambe, 3.
Diphyphyllum Lonsdale, Lambe, 2.
  arundinaceum Billings, Lambe, 2.
  billingsi n. sp., Greene, 6.
  integumentum Barrett, Weller, 6.
  cæspitosum Hall (sp.), Lambe, 2.
  dilatum n. sp., Greene, 15.
  multicaule Hall (sp.), Lambe, 2.
  rugosum Milne Edwards and Haime (sp)., Lambe, 2.
  simcoense Billings (sp.), Lambe, 2.
  strictum Milne Edwards and Haime (sp.), Lambe, 2.
  verneuilanum Milne Edwards and Haime (sp.), Lambe, 2.
Diploclema Ulrich, Grabau, 1.
  sparsa (Hall), Grabau, 1.
Diplocaulus Cope, Broili, 1, 2.
Diplocaulus Cope, Case, 3.
  copei n. sp., Broili, 2.
  magnicornis, Broili, 1.
  magnicornis Cope, Broili, 2.
  pusillus n. sp., Broili, 2.
Diplodocus, Hatcher, 15.
Diplodocus (Marsh), Hatcher, 1.
Diplodocus, Osborn and Granger, 1.
  longus, Osborn, 32.
Diplodonta Brown, Arnold, 2.
  acclinis Conrad, Glenn, 6.
  harfordi n. sp., Anderson, 7.
  hopkinsensis Clark, Clark and Martin, 2.
  marlboroensis n. sp., Clark and Martin, 2.
  orbella Gould, Arnold, 2.
  serricata Reeve, Arnold, 2.
  shilohensis Dall, Glenn, 6.
  subvexa (Conrad), Glenn, 6.
  sp., Dall, 10.
Diplograptus McCoy, Ruedemann, 8.
  angustifolius (Hall), Weller, 6.
  dentatus Brongniart sp., Ruedemann, 8.
  foliaceus (Murch.), Weller, 6.
  inutilis Hall, Ruedemann, 8.
  laxus n. sp., Ruedemann, 8.

Paleontology—Continued.
Genera and species described—Continued.
Diplograptus longicaudatus n. sp., Ruedemann, 8.
Diplomoceras notabile n. sp., Whiteaves, 12.
Diploneis microtatos var. christianii Cleve, Boyer, 1.
Diplophyllum Hall, Grabau, 1.
  cæspitosum Hall, Grabau, 1.
  cæspitosum Hall, Clarke and Ruedemann, 1.
Diploria labyrinthiformis (Linn.) emend Esper, Vaughan, 2.
Diplotrypa limitaris Ulr., Sardeson, 3.
Diplurus Newberry, Eastman, 20.
  longicaudatus Newberry, Eastman, 20.
Dipoides Jäger, Matthew and Gidley, 1.
  tortus (Leidy), Matthew and Gidley, 1.
Discina concordensis n. sp., Sardeson, 9.
Disciniscа lugubris Conrad, Dall, 8.
  lugubris (Conrad), Martin, 6.
Discinocaris, Clarke, 8.
Discohelix californicus n. sp., Weaver, 1.
Discorbina Parker and Jones, Bagg, 6.
  allomorphinoides (Reuss), Bagg, 9.
  bertheloti (d'Orbigny), Bagg, 1.
  orbicularis (Terquem), Bagg, 6.
  turbo (d'Orbigny), Bagg, 1.
Discosaurus Leidy, Williston, 14.
Discosparsa varians, n. sp., Ulrich, 2.
Discotropites n. gen., Hyatt and Smith, 1.
  sandlingensis Hauer, Hyatt and Smith, 1.
Dissacus saurognathus Wortman, Osborn, 36.
Distephanus crux (Ehrenberg), Martin, 8.
  speculum (Ehrenberg), Martin, 8.
Ditypodon Sandberger, Dall, 8.
Divaricella von Martens, Dall, 8.
  section Bourdotia Dall, Dall, 8.
  section Divaricella s. s., Dall, 8.
  section Pompholigina Dall, Dall, 8.
  chipolana n. sp., Dall, 8.
  compsa n. sp., Dall, 8.
  dentata Wood, Dall, 8.
  quadrisulcata Orbigny, Dall, 8.
  quadrisulcata (d'Orbigny), Glenn, 6.
Dolatocrinus Lyon, Wood (Elvira), 3.
  amplus? M. & G., Rowley, Greene, 10.
  aplatus M. & G., Rowley, Greene, 8.
  arrosus? M. & G., Rowley, Greene, 8.
  arrosus var. cognatus n. var., Rowley, Greene, 8.

Paleontology—Continued.
Genera and species described—Continued.
Dolatocrinus aspratilis M. & G., Rowley, Greene, 6.
  asterias n. sp., Wood (Elvira), 3.
  cælatus M. & G., Rowley, Greene, 11.
  charlestownensis M. & G., Rowley, Greene, 10.
  charlestownensis Miller and Gurley, Wood (Elvira), 3.
  corbuliformis n. sp., Rowley, Greene, 10.
  corporosus? M. & G., Rowley, Greene, 11.
  corporosus var. concinnus n. var., Rowley, Greene, 10.
  corporosus var. decoratus n. var., Rowley, Greene, 10.
  costatus n. sp., Wood (Elvira), 3.
  curriei n. sp., Rowley, Greene, 9.
  elegantulus n. sp., Rowley, Greene, 10.
  excavatus W. and Sp., Rowley, Greene, 14.
  excavatus Wachsmuth and Springer, Wood (Elvira), 3.
  excavatus W. & S., Rowley, Greene, 8.
  excavatus? W. and Sp., Rowley, Greene, 9.
  excavatus var. incarinatus n. var., Rowley, Greene, 7.
  fungiferus n. sp., Rowley, Greene, 8.
  greenei M. & G., Rowley, Greene, 11.
  greenei Miller and Gurley, Wood (Elvira), 3.
  hammelli Miller and Gurley, Wood (Elvira), 3.
  major Wachsmuth and Springer, Wood (Elvira), 3.
  marshi Lyon, Rowley, Greene, 11.
  multibrachiatus n. sp., Rowley, Greene, 9.
  multinodosus n. sp., Rowley, Greene, 10.
  nodosus M. & G., Rowley, Greene, 11.
  noduliferus n. sp., Rowley, Greene, 9.
  ornatus Meek, Wood (Elvira), 3.
  pernodosus n. sp., Rowley, Greene, 7.
  preciosus M. & G., Rowley, Greene, 10.
  pulchellus M. & G., Rowley, Greene, 6.
  salebrosus Miller and Gurley, Wood (Elvira), 3.
  spinosus M. & G., Rowley, Greene, 11.
  springeri n. sp., Rowley, Greene, 8.
  triadactylus Barris, Wood (Elvira), 3.

Paleontology—Continued.
Genera and species described—Continued.
Dolatocrinus venustus M. & G., Rowley, Greene, 11.
  wachsmuthi n. nom., Wood (Elvira), 3.
  welleri n. sp., Rowley, Greene, 9.
  sp.?, Rowley, Greene, 6.
  sp., Wood (Elvira), 3.
Doleropteris pennsylvanica Dn. sp., White (D.), 10.
Dolichobrachium gracile n. gen. and sp., Williston, 23.
Dolichopterus Hall, Grabau, 1.
  macrochirus Hall, Grabau, 1.
Dolichorhynchops Williston, Williston, 14.
  osborni Williston, Williston, 14.
  osborni n. sp., Williston, 9.
Dolichotoma Bellardi, Arnold, 2.
Donacopsis Sandberger, Dall, 8.
Donax (Linné) Lamarck, Arnold, 2.
  californica Conrad, Arnold, 2.
  lævigata Deshayes, Arnold, 2.
  sp., Ravn, 1.
Dosinia Scopoli, Arnold, 2.
Dosinia Scopoli, Dall, 8.
Dosinia s. s., Dall, 8.
  section Austrodosinia Dall, Dall, 8.
  section Dosinia s. s., Dall, 8.
  section Dosinidia Dall, Dall, 8.
  section Dosinisca Dall, Dall, 8.
  section Dosinorbis Dall, Dall, 8.
  section Orbiculus Megerle Dall, 8.
  (Dosinidia) acetabulum Conrad, Dall, 8.
  acetabulum Conrad, Glenn, 6.
  ? alaskana n. sp., Dall, 10.
  (Dosinidia) chipolana n. sp., Dall, 8.
  (Dosinidia) concentrica Born., Dall, 8.
  (Dosinidia) discus Reeve, Dall, 8.
  (Dosinidia) elegans Conrad, Dall, 8.
  (Dosinidia) ilogona n. sp., Dall, 8.
  ponderosa Gray, Arnold, 2.
  (Dosinidia) ponderosa Gray, Dall, 8.
Dosinidia Dall, Dall, 8.
Dosiniopsis Conrad, Dall, 8.
  lenticularis (Rogers), Clark and Martin, 2.
Dosinisca Dall, Dall, 8.
Dosinorbis Dall, Dall, 8.
Douvilliceras mamillare Schloth., Anderson, 3.
Drillia Gray, Arnold, 2.
  calvertensis n. sp., Martin, 5.
  cancellata Carpenter, Arnold, 2.
  harmonica n. sp., Casey, 4.
  hemphilli Stearns, Arnold, 2.
  incilifera (Conrad), Martin, 5.
  incilifera var. angulata n. var., Martin, 5.
Drillia incilifera var. distans (Conrad), Martin, 5.
  incisa Carpenter, Arnold, 2.
  inermis Hinds, Arnold, 2.
  inermis var. penicillata Carpenter, Arnold, 2.
  johnsoni n. sp., Arnold, 2.
  limatula Conrad, Martin, 5.
  limatula var. dissimilis Conrad, Martin, 5.
  limatula var. pyramidalis n. var., Martin, 5.
  merriami n. sp., Arnold, 2.
  montereyensis Stearns, Arnold, 2.
  pseudeburnea (Whitfield), Martin, 5.
  pudica Hinds, Arnold, 2.
  renaudi n. sp., Arnold, 2.
  torosa Carpenter, Arnold, 2.
  whitfieldi n. sp., Martin, 5.
Dromillopus n. gen., Matthew (G. F.), 30.
  quadrificus n. sp., Matthew (G. F.), 30.
Dromocyon vorax Marsh, Wortman, 5, 6.
Dromopus agilis Marsh, Matthew (G. F.), 25.
  celer n. sp., Matthew (G. F.), 23.
  velox n. sp., Matthew (G. F.), 30.
Drupa rhabdosperma Lesquereux, Perkins, 17.
Drymotrypa Ulrich, Grabau, 1.
  diffusa (Hall), Grabau, 1.
Dryopteris angustipinnata (Fontaine) Knowlton, Fontaine, 5.
  fredericksburgensis (Fontaine) Knowlton, Fontaine, 5.
  heterophylla (Fontaine) Knowlton, Fontaine, 5.
  parvifolia (Fontaine) Knowlton, Fontaine, 5.
Drupa rhabdosperma Lx., Perkins, 13.
Dryptosaurus Marsh, Osborn, 50.
  incrassatus (Cope), Lambe, 6, 8.
Dynamosaurus imperiosus n. gen. and sp., Osborn, 50.
Dystactospongia minor Ulrich, Hayes and Ulrich, 1.
Eatonia goodlandensis n. sp., Kindle and Breger, 1.
  medialis (Van.), Weller, 6.
  peculiaris (Con.), Weller, 6.
  singularis (Van.), Weller, 6.
Eccyliomphalus contiguus Ulrich, Weller, 6.
  fredericus n. sp., Raymond (P. E.), 1.
  subelliptica n. sp., Weller, 6.
  trentonensis (Conrad), Weller, 6.
Eccyliopterus spiralis n. sp., Ruedemann, 2.
Echinarachnius Leske, Arnold, 2.
Echinocardium orthonotum Conrad, Clark (W. B.), 7.

Paleontology—Continued.
Genera and species described—Continued.
- Echinocaris clarkii n. sp., Beecher, 8.
  - randalli n. sp., Beecher, 8.
  - socialis, Beecher, 8.
- Echinochama Fischer, Dall, 8.
  - antiquata n. sp., Dall, 8.
  - arcinella Linné, Dall, 8.
- Ecphora Conrad, Martin, 5.
  - quadricostata (Say), Martin, 5.
  - quadricostata var. umbilicata (Wagner), Martin, 5.
  - tampaensis (Dall), Martin, 5.
  - tricostata n. sp., Martin, 5.
- Edaphosaurus pogonias, Case, 6.
- Edestus, Eastman, 6, 8, 13, 22.
  - heinrichi N. & P., Eastman, 6.
- Edmondia (?) arcuata n. sp., Cleland, 3.
  - aspinwallensis Meek, Beede, 1.
  - ? deckerensis n. sp., Weller, 6.
  - gibbosa Geinitz, Girty, 3.
  - mortonensis Geinitz?, Girty, 3.
  - nebrascensis (Geinitz), Beede, 1.
  - nuptialis Win., Weller, 2.
  - strigillata Win., Weller, 2.
  - subtruncata Meek, Girty, 3.
  - ? sp., Girty, 3.
- Edriocrinidæ n. fam., Talbot, 2.
- Edriocrinus Hall, Talbot, 2.
  - pocilliformis Hall, Talbot, 2.
  - sacculus Hall, Weller, 6.
- Egeria Roissy, Dall, 8.
  - section Egeria s. s., Dall, 8.
  - section Profischeria Dall, Dall, 8.
  - paradoxa (Born.), Dall, 8.
- Elasmatium n. gen., Clarke, 19.
  - gowandense n. sp., Clarke, 19.
- Elasmosaurus Cope, Williston, 14.
- Eleutheroblastus, Hambach, 1.
- Eleutherocrinus cassedayi Y. & S., Rowley, Greene, 11.
  - cassedayi Shumard and Yandell, Rowley, Greene, 5.
- Elkania Ford, Walcott, 12.
  - n. sp., Walcott, 12.
- Elonichthys perpennatus n. sp., Eastman, 4.
  - disjunctus n. sp., Eastman, 10.
  - perpennatus Eastman, Eastman, 10.
- Elosaurus n. gen., Peterson and Gilmore, 1.
  - parvus n. sp., Peterson and Gilmore, 1.
- Elotherium calkinsi n. sp., Sinclair, 6.
- Elymocaris siliqua, Beecher, 8.
- Emarginula marylandica n. sp., Martin, 5.
- Embaphias Cope, Williston, 14.
- Embolophorus (?) Cope, Case, 3.
  - dollovianus Cope, em. Case, Broili, 2.
  - dollovianus Cope, Case, 4, 5.
- Emmelezoe decora n. sp., Clarke, 12.
- Empo Cope, Hay, 10.
- Empo Cope, Stewart, 1.
  - contracta Cope, Stewart, 1.

Paleontology—Continued.
Genera and species described—Continued.
- Empo lisbonensis Stewart, Stewart, 1.
  - nepæolica Cope, Hay, 10.
  - nepæolica Cope, Stewart, 1.
  - semianceps (Cope), Stewart, 1.
- Enallophyllum, n. gen., Greene, 2.
  - grabaui n. sp., Greene, 2.
- Encephalartopsis? oregonensis n. sp., Fontaine, 1.
- Enchodus Agassiz, Loomis, 1.
- Enchodus Agassiz, Hay, 10.
- Enchodus Agassiz, Stewart, 1.
  - amicrodus Stewart, Loomis, 1.
  - amicrodus Stewart, Stewart, 1.
  - dirus (Leidy), Stewart, 1.
  - dolichus Cope, Hay, 10.
  - dolichus Cope, Loomis, 1.
  - dolichus Cope, Stewart, 1.
  - ferox Leidy, Hay, 10.
  - gladiolus Cope, Hay, 10.
  - parvus Stewart, Stewart, 1.
  - petrosus Cope, Hay, 10.
  - petrosus Cope, Loomis, 1.
  - petrosus Cope, Stewart, 1.
  - sævus n. sp., Hay, 10.
  - shumardi Leidy, Loomis, 1.
  - shumardi Leidy, Stewart, 1.
  - tetræcus Cope, Hay, 10.
  - sp., Stewart, 1.
- Enchostoma sp., Girty, 3.
- Encrinurus Emmrich, Grabau, 1.
  - indianensis n. sp., Kindle and Breger, 1.
  - ornatus Hall and Whitfield, Grabau, 1.
  - punctatus (Brunnich) Wahlenberg, Van Ingen, 2.
  - trentonensis Walc., Weller, 6.
  - tuberculosis n. sp., Collie, 3.
- Encrinus liliiformis, Grabau, 8.
- Endoceras consuetum n. sp., Sardeson, 2.
  - uddeni (Cragin), Hyatt, 1.
- Endocostea brooksi n. sp., Johnson (D. W.), 5.
- Endopachys Lonsdale, Vaughan, 16.
- Engonoceras Neumayr, Hyatt, 1.
- Engonoceras Neumayr, Lasswitz, 1.
  - ambiguum Hyatt, Lasswitz, 1.
  - belviderense (Cragin), Hyatt, 1.
  - complicatum n. sp., Hyatt, 1.
  - dumbli Cragin sp., em. Lasswitz, Lasswitz, 1.
  - gibbosum n. sp., Hyatt, 1.
  - G. Stolleyi Boehm, em. Lasswitz, Lasswitz, 1.
  - hilli Boehm, em. Lasswitz, Lasswitz, 1.
  - pierdenale (von Buch), Hyatt, 1.
  - pierdenale var. commune, Hyatt, 1.
  - roemeri (Cragin), Hyatt, 1.
  - serpentinum (Cragin), Hyatt, 1.
  - stolleyi Böhm, Hyatt, 1.
  - subjectum n. sp., Hyatt, 1.
- Enoploclytia minor Woodward, Whiteaves, 12.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Ensis directus (Conrad), Glenn, 6.
    - ensiformis Conrad, Glenn, 6.
  - Enteletes hemiplicata (Hall), Beede, 1.
    - hemiplicatus Hall, Girty, 3.
  - Enterolasma Simpson, Grabau, 1.
    - caliculus (Hall), Grabau, 1.
      - cf. caliculus Hall (sp.), Clarke and Ruedemann, 1.
  - Entodesma Philippi, Dall, 8.
  - Entolium aviculatum (Swallow), Beede, 1.
  - Entomis prosephina nov., Loomis, 4.
    - serratostriata Sandberger, Clarke, 19.
    - variostriata Clarke, Clarke, 19.
  - Entoptychus rostratus n. sp., Sinclair, 6.
    - sperryi n. sp., Sinclair, 6.
  - Eocidaris Desor, Klem, 1.
    - blairi Miller, Klem, 1.
    - hallianus Geinitz, Klem, 1.
  - Eoclathurella n. gen., Casey, 5.
    - jacksonica n. sp., Casey, 5.
    - obesula n. sp., Casey, 5.
  - Eodrillia n. gen., Casey, 5.
  - Eoharpes n. n. for Harpina, Raymond (P. E.), 6.
  - Eoobolus n. subg., Matthew (G. F.), 20.
  - Eopolychætus albaniensis n. gen. et sp., Ruedemann, 1.
  - Eospongia Billings, Seely, 3.
    - varians Billings, Seely, 3.
  - Eostrophomena n. subg. of Strophomena, Walcott, 12.
  - Eosurcula n. gen., Casey, 5.
    - concinna n. sp., Casey, 5.
    - helicoidea n. sp., Casey, 5.
    - moorei Gabb, Casey, 5.
    - pulcherrima Heilp., Casey, 5.
    - tuomeyi Ald., Casey, 5.
  - Eotomaria areyi n. sp., Clarke and Ruedemann, 1.
    - durhamensis Whiteaves (sp.), Clarke and Ruedemann, 1.
    - galtensis Billings (sp.), Clarke and Ruedemann, 1.
    - kayseri n. sp., Clarke and Ruedemann, 1.
    - obsoletum n. sp., Raymond (P. E.), 7.
  - Ephedrites? vernonensis n. sp., Fontaine, 5.
  - Epilucina Dall, Dall, 8.
  - Epiphragmophora Strobel, Arnold, 2.
    - fidelis antecedens Stearns (R. E. C.), 1.
  - Eporeodon major var. cedrensis n. var., Matthew (W. D.), 2.
  - Equisetum arcticum Heer, Penhallow, 4.
    - lyellii Mantell, Fontaine, 4.
    - marylandicum Fontaine, Fontaine, 5.
    - oregonense Newb., Knowlton, 14.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Equisetum phillipsii (Dunker) Brongniart, Fontaine, 4.
    - texense Fontaine?, Fontaine, 3.
    - ? sp., Fontaine, 1.
    - sp., Knowlton, 14.
  - Equus barcenæi Cope, Gidley, 1.
    - complicatus (Leidy), Gidley, 1.
    - conversidens Owen, Gidley, 1.
    - crenidens Cope, Gidley, 1.
    - fraternus Leidy, Gidley, 1.
    - giganteus n. sp., Gidley, 1.
    - occidentalis Leidy, Gidley, 1.
    - pacificus Leidy, Gidley, 1.
    - pectinatus (Cope), Gidley, 1.
    - scotti Gidley, Gidley, 1.
    - semiplicatus Cope, Gidley, 1.
    - tau Owen, Gidley, 1.
  - Erato Risso, Arnold, 2.
    - columbella Menke, Arnold, 2.
    - perexigua (Conrad), Martin, 5.
    - veraghoörensis (?) Stol., Anderson, 3.
  - Erethizon godfreyi n. sp., Allen (J. A.), 1.
  - Eretmocrinus brevis n. sp., Rowley, 2.
    - nodosus, Rowley, 4.
    - ? parvus n. sp., Rowley, 2.
  - Eridophyllum louisvillensis n. sp., Greene, 6.
  - Eridotrypa briareus (Nicholson), Nickles, 6.
    - mutabilis Ulr., Sardeson, 3.
    - vevayensis n. sp., Cumings, 3.
  - Erinaceidæ, Matthew (W. D.), 19.
  - Eriphyla Gabb., Dall, 8.
  - Erismacanthus M'Coy, Eastman, 9.
    - barbatus n. sp., Eastman, 10.
    - formosus n. sp., Eastman, 9, 10.
    - maccoyanus St. John and Worthen, Eastman, 10.
  - Erisocrinus megalobrachius Beede, Beede, 1.
    - typus Meek and Worthen, Beede, 1.
  - Ervilia planata Dall, Glenn, 6.
  - Erycina (Pseudopythina?) americana Dall, Glenn, 6.
    - calvertensis n. sp., Glenn, 6.
    - marylandica n. sp., Glenn, 6.
    - pruna n. sp., Glenn, 6.
    - rickardi n. sp., Glenn, 6.
    - speciosa n. sp., Glenn, 6.
    - sp., Ravn, 1.
  - Erycinella Conrad, Dall, 8.
    - (Carditopsis) bernardi n. sp., Dall, 8.
    - ovalis Conrad, Dall, 8.
  - Erycus consumptus n. sp., Scudder, 1.
  - Eryma dawsoni Woodward, Whiteaves, 12.
  - Eryops Cope, Branson, 2.
  - Eryops Cope, Case, 5.
    - latus n. sp., Case, 5.
    - megacephalus, Sternberg, 2.
    - megacephalus Cope, Case, 8.

Paleontology—Continued.
Genera and species described—Continued.

- Escasona, Matthew (G. F.), 20.
  - ?? ingens n. sp., Matthew (G. F.), 13, 20.
  - rutellum n. sp., Matthew (G. F.), 13.
  - ortoni n. sp., Clarke (J. M.), 12.
  - rutellum, Matthew (G. F.), 20.
  - ? vetus, Matthew (G. F.), 13, 20.
- Eschara ?? digitata Morton, Ulrich, 2.
- Escharopora hilli (James), Nickles, 6.
  - siluriana n. sp., Weller, 6.
- Etagraptus n. subg., Ruedemann, 8.
- Ethmophyllum rarum Ford, Sears, 1.
- Etoblattina coriacea n. sp., Sellards, 8.
  - hilliana ?, Sellards, 8.
  - juvenis n. sp., Sellards, 8.
  - mazona, Sellards, 5, 8.
  - sp., Sellards, 5.
- Eubrachiosaurus browni n. gen. and sp., Williston, 23.
- Eubrontes E. Hitchcock, Lull, 2.
  - approximatus (C. H. Hitchcock), Lull, 2.
  - divaricatus (E. Hitchcock), Lull, 2.
  - giganteus E. Hitchcock, Lull, 2.
  - platypus nom. nov., Lull, 2.
- Eucallista Dall, Dall, 8.
- Eucalyptocrinus Goldfuss, Grabau, 1.
  - decorus (Phillips), Grabau, 1.
  - ovalis Hall, Grabau, 8.
- Eucalyptus ? angustifolia Newb., Hollick, 11.
  - (?) dubia n. sp., Berry, 5.
  - geinitzi Heer, Berry, 5, 7.
  - rosieriana Ward n. sp., Fontaine, 5.
  - wardiana nom. nov., Berry, 6.
- Eucastor (Leidy) Allen, Matthew, W. D.), 6.
- Euceratherium n. gen., Sinclair and Furlong, 1.
  - collinum n. sp., Sinclair and Furlong, 1.
  - collinum Furlong and Sinclair, Sinclair, 7.
- Euchilodon Gabb, Casey, 5.
  - crenocarinatum Heilp., Casey, 5.
  - gabbianum n. sp., Casey, 5.
  - reticulatum Gabb, Casey, 5.
- Euclastes (?) Clark, Case, 1.
- Euconispira bicarinata McChesney, Girty, 3.
  - taggarti Meek, Girty, 3.
  - sp., Girty, 3.
- Euconulus turbinatus n. sp., Gulick, 1.
- Eucrotaphus helenæ n. sp., Douglass, 4.
- Eucyrtidium calvertense n. sp., Martin, 8.
- Eudiscoceras Hyatt, Hyatt and Smith, 1.
  - gabbi Meek, Hyatt and Smith, 1.
- Eugnathidæ, Eastman, 20.

Paleontology—Continued.
Genera and species described—Continued.

- Eugyrichnites minutus n. gen., and sp., Ami, 46.
- Euhapsis platyceps n. gen. and sp., Peterson, 3.
- Eulima Risso, Arnold, 2.
  - eborea Conrad, Martin, 5.
  - falcata Carpenter, Arnold, 2.
  - hastata Sowerby, Arnold, 2.
  - lævigata (H. C. Lea), Martin, 5.
  - micans Carpenter, Arnold, 2.
  - migrans Conrad, Martin, 5.
  - raymondi n. sp., Rivers, 1.
- Eulimella (Anisocycla) marylandica n. sp., Martin, 5.
- Eulophoceras n. gen., Hyatt, 1.
- Eulopia Dall, Dall, 8.
- Euloxa Conrad, Dall, 8.
  - latisulcata Conrad, Dall, 8.
- Eumetria marcyi Shumard ?, Girty, 3.
  - woosteri White, Girty, 3.
- Eumys minor n. sp., Douglass, 4.
- Eunella harmonia Hall, Kindle, 1.
  - lincklæni Hall, Raymond (P. E.), 3, 4.
  - lincklaeni Hall, Kindle, 1.
  - sullivanti Hall, Kindle, 1.
- Eunema altisulcatum n. sp., Hudson, 1.
  - cretaceum Whiteaves, Whiteaves, 12.
  - epitoma n. sp., Hudson, 1.
  - historicum n. sp., Hudson, 1.
  - leptonotum n. sp., Raymond (P. E.), 7.
- Eunoa accola n. gen. and sp., Clarke (J. M.), 8.
- Euomphalopterus sp. indet., Whiteaves, 17.
- Euomphalus alatus var., Kindle and Breger, 1.
  - alatus var. americanus n. var., Kindle and Breger, 1.
  - alatus var. limatoidea n. var., Kindle and Breger, 1.
  - catilloides Conrad, Girty, 3.
  - (Straparollus) exiguus n. sp., Kindle, 1.
  - fairchildi n. sp., Clarke and Ruedemann, 1.
  - laxus White, Sardeson, 11.
  - planodiscus Hall, Kindle, 1.
  - sampsoni Nettleroth, Kindle, 1.
  - springvalensis White, Sardeson, 11.
  - winonensis n. sp., Sardeson, 2.
- Eupachycrinus magister Miller and Gurley, Beede, 1.
- Eupalamopus Hay, Lull, 2.
  - dananus (E. Hitchcock), Lull, 2.
- Eupelor Cope, Branson, 2.
- Eupera Bourguignat, Dall, 8.
- Euphemus nodocarinatus Hall, Girty, 3.
  - subpapillosus White ?, Girty, 3.
- Eupleura H. and A. Adams, Arnold, 2.
  - muriciformis Broderip, Arnold, 2.
  - muriciformis var. curta n. var., Arnold, 2.

Paleontology—Continued.

Genera and species described—Continued.

- Eupodiscus inconspicuus Rattray, Boyer, 1.
- Euprotogonia puercensis (Cope), Douglass, 3.
    - puercensis (Cope), Marsh, Osborn, 36.
- Eupsammia conradi Vaughan, Vaughan, 1.
    - elaborata (Conrad), Vaughan, 1.
- Euryacodon lepidus Marsh, Wortman, 14.
- Eurychilina bulbifera n. sp., Ruedemann, 2.
    - dianthus n. sp., Ruedemann, 2.
    - jerseyensis n. sp., Weller, 6.
    - oculifera n. sp., Weller, 6.
    - obliqua n. sp., Ruedemann, 2.
    - (?) solida n. sp., Ruedemann, 2.
    - subradiata var., rensselaerica n. var., Ruedemann, 2.
- Eurymya, Sardeson, 10.
- Eurypterus De Kay, Grabau, 1.
    - dekayi Hall, Grabau, 1.
    - lacustris Harlan, Grabau, 1.
    - pachychirus Hall, Grabau, 1.
    - pittsfordensis n. sp., Sarle, 2.
    - pustulosus Hall, Grabau, 1.
    - remipes De Kay, Grabau, 1.
    - robustus Hall, Grabau, 1.
- Eusarcus Grote and Pitt, Grabau, 1.
    - grandis Grote and Pitt, Grabau, 1.
    - scorpionis Grote and Pitt, Grabau, 1.
- Eusyodon maximus Leidy, Osborn, 34.
- Euthydesma Hall, Clarke, 19.
    - subtextile Hall, Clarke, 19.
- Eutivela Dall, Dall, 8.
- Eutomoceras Hyatt, Hyatt and Smith, 1.
- Eutomoceras Hyatt, Smith (J. P.), 5.
    - dunni n. sp., Smith (J. P.), 5.
    - laubei Meek, Hyatt and Smith, 1.
    - sandlingense Hauer, Smith (J. P.), 5.
- Eutypomys n. gen., Matthew (W. D.), 22.
    - thomsoni n. sp., Matthew (W. D.), 22.
- Evalea A. Adams, Arnold, 2.
- Exocampe E. Hitchcock, Lull, 2.
    - arcta E. Hitchcock, Lull, 2.
    - minima E. Hitchcock, Lull, 2.
    - ornata E. Hitchcock, Lull, 2.
- Exogyra clarki n. sp., Shattuck, 8.
    - potosina Castillo and Aguilera, Cragin, 2.
    - subplicifera Felix, Cragin, 2.
- Falsifusus n. gen., Grabau, 16.
    - ? apicalis (Johnson) Grabau, 16.
    - ? houstonensis (Johnson), Grabau, 16.
    - ludovicianus (Johnson), Grabau, 16.
    - meyeri (Aldrich), Grabau, 16.

Paleontology—Continued.

Genera and species described—Continued.

- Fasciolaria crookiana n. sp., Whitfield, 13.
    - ramondi n. sp., Maury, 1.
- Fascipora subramosa n. sp., Ulrich, 2.
- Favia Oken, 1815, Vaughan, 2.
- Favosites Lamarck, Grabau, 1.
    - clausus Rominger, Greene, 12.
    - constrictus (Hall), Grabau, 1.
    - corrugatus n. sp., Weller, 6.
    - cystoides n. sp., Herzer, 5.
    - favosus, Hayes and Ulrich, 1.
    - forbesi Edwards and Haime, Clarke and Ruedemann, 1.
    - gibsoni n. sp., Parks, 5.
    - gothlandicus Lamarck, Clarke and Ruedemann, 1.
    - helderbergiæ Hall, Shimer, 5.
    - helderbergiæ Hall, Weller, 6.
    - helderbergiæ præcedens, n. var., Schuchert, 4.
    - hisingeri Edwards and Haime, Clarke and Ruedemann, 1.
    - louisvillensis n. sp., Greene, 14.
    - niagarensis Hall, Clarke and Ruedemann, 1.
    - niagarensis Hall, Grabau, 1.
    - parasiticus (Hall), Grabau, 1.
    - pyriforme (Hall), Weller, 6.
    - pyriformis (Hall), Grabau, 1.
    - seamani n. sp., Greene, 4.
    - sphæricus Hall, Shimer, 5.
- Feistmantelia virginica n. sp., Fontaine, 5.
- Felidæ, Matthew (W. D.), 19.
- Fenestella, Cumings, 9, 10.
- Fenestella Lonsdale, Grabau, 1.
- Fenestella Lonsdale, Condra, 2.
    - binodata n. sp., Condra, 1, 2.
    - conradi Ulrich, Condra, 2.
    - conradi var. compactilis n. var., Condra, 1, 2.
    - cyclofenestrata n. sp., Condra, 1, 2.
    - elegans Hall, Grabau, 1.
    - gracilis n. sp., Condra, 1, 2.
    - kansanensis Rogers, Condra, 2.
    - limbata Foerste, Condra, 2.
    - mimica Ulrich, Condra, 2.
    - parvipora n. sp., Condra, 1, 2.
    - perelegans Meek, Condra, 2.
    - polyporoides n. sp., Condra, 1, 2.
    - spinulosa n. sp., Condra, 1, 2.
    - subarctica n. sp., Whiteaves, 17.
    - subrudis n. sp., Condra, 1, 2.
    - tenax Ulrich, Ulrich, 8.
    - tenax Ulrich (?), Condra, 2.
    - tenax Ulrich, Hayes and Ulrich, 1.
    - cf. tenax Ulrich, Girty, 3.
    - sp., Girty, 3.
    - sp. (?), Condra, 1.
- Fenestralia st. ludovici Prout, Ulrich, 8.
- Ficopsis angulatus n. sp., Weaver, 1.
- Ficus atavina Heer, Berry, 7.
    - daphnogenoides (Heer), Berry, 14.

Paleontology—Continued.
Genera and species described—Continued.
Ficus myricoides Hollick, Fontaine, 5.
  neurocarpa n. sp., Hollick, 6.
  ? oregoniana Lesq., Knowlton, 14.
  protæoides Lesq., Hollick, 9.
  reticulata (Lesq.) Knowlton, Berry, 5.
  rhamnoides Knowlton, Johnson (D. W.), 5.
  sapindifolia n. sp., Hollick, 11.
  uncata Lesqx., Johnson (D. W.), 5.
  woolsoni Newb., Berry, 5.
Finkelnburgia n. subg. of Orthis, Walcott, 12.
Fissipedia Matthew (W. D.), 19.
Fissodus St. John and Worthen, Eastman, 10.
  dentatus n. sp., Eastman, 10.
  inæqualis (St. John and Worthen), Eastman, 10.
Fissurella volcano Reeve, Arnold, 2.
Fissuridea Swainson, Arnold, 2.
  alticosta (Conrad), Martin, 5.
  aspera Eschscholtz, Arnold, 2.
  griscomi (Conrad), Martin, 5.
  inæqualis Sowerby, Arnold, 2.
  infrequens n. sp., Aldrich, 2.
  marlboroensis n. sp., Clark and Martin, 2.
  marylandica (Conrad), Martin, 5.
  murina (Carpenter) Dall, Arnold, 2.
  nassula (Conrad), Martin, 5.
  redimicula (Say), Martin, 5.
Fistulipora McCoy, Condra, 2.
  carbonaria Ulrich, Condra, 2.
  carbonaria Ulrich, Girty, 3.
  carbonaria Ulr., Sardeson, 3.
  carbonaria var. nebrascensis n. var., Condra, 1, 2.
  nodulifera Meek, Condra, 2.
Flabellaria magothiensis n. sp., Berry, 11.
Flabellum sp., Vaughan, 1.
Flemingites Waagen, Hyatt and Smith, 1.
  Waagen, Smith (J. P.), 5.
  russelli n. sp., Hyatt and Smith, 1.
  russelli Hyatt and Smith, Smith (J. P.), 5.
Floyda n. gen., Webster, 1.
  concentrica n. sp., Webster, 1.
Fluminicola columbiana (Hemphill) Pilsbry, Stearns (R. E. C.), 2.
  merriami Pilsbry and Beecher, Stearns (R. E. C.), 2.
Forbesiocrinus, Springer (F.), 2.
Fordilla troyensis Walcott, Sears, 1.
Fossarus Philippi, Arnold, 2.
  (Isapis) dalli (Whitfield), Martin, 5.
  (Isapis) fenestrata Carpenter, Arnold, 2.
Fraxinus integrifolia Newb., Knowlton, 14.

Paleontology—Continued.
Genera and species described—Continued.
Frenelopsis hoheneggeri (Ett.) Schenk., Berry, 7.
  ramosissima Fontaine, Fontaine, 5.
Fulgur alveatum (Conrad), Martin, 5.
  coronatum Conrad, Martin, 5.
  coronatum var. rugosum Conrad, Martin, 5.
  fusiforme Conrad, Martin, 5.
  spiniger (Conrad) var., Martin, 5.
  tuberculatum Conrad, Martin, 5.
Fulguroficus argutus Clark, Clark and Martin, 1.
Fulgurofusus n. gen., Grabau, 16.
  quercollis (Harris), Grabau, 16.
  rugatus (Aldrich), Grabau, 16.
Fulicopus E. Hitchcock, Lull, 2.
  lyellianus E. Hitchcock, Lull, 2.
Fusispira (?) spicula n. sp., Sardeson, 9.
Fusitoma n. gen., Casey, 5.
Fusoficula juvenis (Whitfield), Clark and Martin, 2.
Fusulina cylindrica, Smith (A. J.), 2.
  cylindrica Fischer de Waldheim, Girty, 3.
  secalica (Say), Beede, 1.
Fusus Bruguiere, Grabau, 16.
Fusus Lamarck, Arnold, 2.
  æquilateralis n. sp., Weaver, 1.
  barbarensis Trask, Arnold, 2.
  gabbi n. sp., Grabau, 16.
  haitensis Sowerby, Grabau, 16.
  henekeni Sowerby, Grabau, 16.
  interstriatus Heilprin, Clark and Martin, 2.
  luteopictus Dall, Arnold, 2.
  mississippiensis Conrad, Casey, 4.
  robustus Trask, Arnold, 2.
  rugosus Trask, Arnold, 2.
  ? subtenuis Heilprin, Clark and Martin, 2.
  texanus n. sp., Shattuck, 8.
  vicksburgensis, Casey, 4.
  (Hemifusus) wilkesana n. sp., Anderson, 7.
  sp., Ravn, 1.
  sp., Shattuck, 8.
Gadinia Gray, Arnold, 2.
  reticulata Sowerby, Arnold, 2.
Gafrarium Bolten, Dall, 8.
  section Circe Schumacher, Dall, 8.
  section Circenita Jousseaume, Dall, 8.
  section Gouldia C. B. Adams, Dall, 8.
  section Parmulina Dall, Dall, 8.
  ? section Radiocrista Dall, Dall, 8.
  (Gouldia) altum n. sp., Dall, 8.
  (Gouldia) erosum n. sp., Dall, 8.
  (Gouldia) metastriatum Conrad, Dall, 8.
Galerus Humphrey, Arnold, 2.
  mammillaris Broderip, Arnold, 2.
Galeocerdo aduncus Agassiz, Eastman, 18.

Paleontology—Continued.

Genera and species described—Continued.

- Galeocerdo contortus Gibbes, Eastman, 18.
  - latidens Agassiz, Eastman, 1, 18.
  - triqueter n. sp., Eastman, 18.
- Galesaurus, Case, 6.
- Gastrioceras Hyatt, Smith (J. P.), 3.
  - branneri Smith, Smith (J. P.), 3.
  - carbonarium von Buch, Smith (J. P.), 3.
  - compressum Hyatt, Smith (J. P.), 3.
  - entogonum Gabb, Smith (J. P.), 3.
  - excelsum Meek, Smith (J. P.), 3.
  - globulosum Meek and Worthen, Smith (J. P.), 3.
  - illinoisense Miller and Gurley, Smith (J. P.), 3.
  - kansasense Miller and Gurley, Smith (J. P.), 3.
  - kingi Hall and Whitfield, Smith (J. P.), 3.
  - listeri Martin, Smith (J. P.), 3.
  - montgomeryense Miller and Gurley, Smith (J. P.), 3.
  - nolinense Cox, Smith (J. P.), 3.
  - occidentale Miller and Faber, Smith (J. P.), 3.
  - planorbiforme Shumard, Smith (J. P.), 3.
  - subcavum Miller and Gurley, Smith (J. P.), 3.
  - welleri n. sp., Smith (J. P.), 3.
- Gastrochæna striatula n. sp., Aldrich, 3.
  - sp., Clark and Martin, 2.
- Geinitzia formosa Heer, Berry, 5, 7.
- Geloina Gray, Dall, 8.
- Gemma Deshayes, Dall, 8.
  - gemma Totten, Dall, 8.
  - gemma var. purpurea Lea, Dall, 8.
  - magna n. sp., Dall, 8.
  - magna var. virginiana Dall, Dall, 8.
  - trigona n. sp., Dall, 8.
- Gemmula Weink., Casey, 5.
  - alternata Con., Casey, 5.
  - amica Casey, Casey, 5.
  - ancilla Casey, Casey, 5.
  - childreni Lea, Casey, 5.
  - conjuncta n. sp., Casey, 5.
  - genitiva n. sp., Casey, 5.
  - lancea n. sp., Casey, 5.
  - ludoviciana Vgn., Casey, 5.
  - margaritosa n. sp., Casey, 5.
  - nodulina n. sp., Casey, 5.
  - nucleata n. sp., Casey, 5.
  - obsolescens n. sp., Casey, 5.
  - parvidens n. sp., Casey, 5.
  - rotædens Con., Casey, 5.
  - tenella Con., Casey, 5.
- Gennæocrinus carinatus n. sp., Wood (Elvira), 2.
  - comptus n. sp., Rowley, Greene, 6.
  - comptus var. spiniferus n. var., Rowley, Greene, 6.
  - facetus n. sp., Rowley, Greene, 6.

Paleontology—Continued.

Genera and species described—Continued

- Gennæocrinus kentuckiensis (Shumard), Wood (Elvira), 3.
  - kentuckiensis? Shumard? Rowley, Greene, 6.
  - sculptus, n. sp., Rowley, Greene, 6.
  - simulans n. sp., Rowley, Greene, 13.
- Genota riversiana n. sp., Raymond (W. J.), 2.
- Gephyroceras cf. domanicense Holzapfel, Clarke, 19.
- Gerablattina arcuata n. sp., Sellards, 8.
- Gerasaphes ulrichana Clarke, Ruedemann, 2.
- Gerhardtia n. gen., Hyatt, 1.
- Gervillia cinderella n. sp., Cragin, 2.
  - corrugata n. sp., Cragin, 2.
  - ? riograndensis n. sp., Cragin, 2.
- Gervilliopsis invaginata (?) White, Shattuck, 8.
- Gibbula glandula (Conrad), Clark and Martin, 2.
- Gilbertina n. gen., Ulrich, 4.
  - spiralis n. sp., Ulrich, 4.
- Gigandipus E. Hitchcock, Lull, 2.
  - caudatus E. Hitchcock, Lull, 2.
- Gillicus Hay, Hay, 10.
  - Hay, Stewart, 1.
  - arcuatus (Cope), Stewart, 1.
- Ginkgo ? acetaria n. sp., Ward, Fontaine, 5.
  - digitata (Brongniart) Heer, Fontaine, 1, 2.
  - huttoni (Sternberg) Heer, Fontaine, 1, 2.
  - huttoni magnifolia Fontaine n. var., Fontaine, 1, 2.
  - lepida, Heer, Fontaine, 1.
  - pusilla Dn., Penhallow, 4.
  - sibirica Heer, Fontaine, 1.
  - sp., Fontaine, 1.
  - sp., Knowlton, 14.
- Ginkgodium? alaskense Fontaine, Fontaine, 2.
- Gissocrinus? problematicus n. sp., Rowley, 3.
- Glans Megerle, Dall, 8.
- Glaphurus n. subg., Raymond (P. E.), 5.
  - primus n. sp., Raymond (P. E.), 5.
  - pustulatus Walcott, 12.
- Glassia variabilis n. sp., Whiteaves, 17.
- Gleichenia delicatula Heer, Hollick, 5.
  - ? gilbert-thompsoni n. sp., Fontaine, 3.
  - nordenskiöldi Heer ?, Fontaine, 3.
  - rhombifolia n. sp., Hollick, 5.
  - saundersii n. sp., Berry, 4.
  - zippei (Corda) Heer, Berry, 7.
- Globigerina d'Orbigny, Bagg, 6.
- Globigerina bilobata d'Orbigny, Bagg, 9.
  - bulloides d'Orbigny, Bagg, 1, 6, 9.
  - cretacea d'Orbigny, Bagg, 6, 9.
  - dubia Egger, Bagg, 9.

Paleontology—Continued.
Genera and species described—Continued.
Globoblastus Hambach, 1.
magnificus n. sp., Hambach, 1.
ornatus n. sp., Hambach, 1.
spathatus n. sp., Hambach, 1.
Glossina spatiosa (Hall)?, Weller, 6.
triangulata Nettleroth, Kindle, 1.
Glossocarpellites n. gen., Perkins, 17.
elongatus (Lesquereux) Perkins, Perkins, 17.
obtusus (Lesquereux), Perkins, Perkins, 17.
parvus Perkins, Perkins, 17.
Glossograptus Emmons, Ruedemann, 8.
echinatus n. sp., Ruedemann, 8.
hystrix n. sp., Ruedemann, 8.
Glottidia Dall, Arnold, 2.
albida Hinds, Arnold, 2.
Glycymeris Da Costa, Arnold, 2.
barbarensis Conrad, Arnold, 2.
idoneus (Conrad), Clark and Martin, 2.
parilis (Conrad), Glenn, 6.
septentrionalis Middendorf, Arnold, 2.
subovata (Say), Glenn, 6.
sp., Dall, 10.
sp.?, Brown (T. C.), 1.
Glyphæa n. sp., Whiteaves, 12.
Glyphioceras Hyatt (emend. Haug), Smith (J. P.), 3.
calyx Phillips, Smith (J. P.), 3.
diadema Goldfuss, Smith (J. P.), 3.
diadema (Branco), Smith (W. D.), 1.
? hathawayanum McChesney, Smith (J. P.), 3.
? leviculum Miller and Faber, Smith (J. P.), 3.
pygmæum Winchell, Smith (J. P.), 3.
Glyptias favosa Linnarsson, Walcott, 1.
Glyptocrinus decadactylus Hall, Hayes and Ulrich, 1.
dyeri Meek, Springer (F.), 3.
insperatus n. sp., Rowley, 3.
insperatus? var. carinatus n. var., Rowley, 3.
insperatus var. pentagonus n. var., Rowley, 3.
plumosus Hall, Grabau, 1.
Glyptodesma cancellata Nettleroth, Kindle, 1.
erectum Hall, Kindle, 1.
occidentale Hall, Kindle, 1.
Glyptostrobus (Taxodium) brookensis (Fontaine), Ward, Fontaine, 5.
brookensis angustifolius (Fontaine) Knowlton, Fontaine, 5.
europæus ungeri Heer, Knowlton, 12.
ungeri Heer, Knowlton, 14.
Glyptotherium texanum n. gen. and sp. Osborn, 16.

Paleontology—Continued.
Genera and species described—Continued.
Glyptotoma n. gen., Casey, 5.
conradiana Ald., Casey, 5.
crassiplicata Gabb, Casey, 5.
parvula n. sp., Casey, 5.
Gomphina Mörch, Dall, 8.
Gomphoceras Sowerby, Grabau, 1.
bellatulum n. sp. (Rowley), Greene, 2.
facetum n. sp., (Rowley), Greene, 2.
isoteloides n. sp., Herzer, 5.
minum Hall, Kindle, 1.
oviforme Hall sp., Rowley, Greene, 2.
oviforme Hall, Kindle, 1.
parallelum n. sp., Herzer, 5.
raphanus Hall?, Kindle, 1.
striatum n. sp. (Rowley), Greene, 2.
turbiniforme M. and W., Kindle, 1.
wabashensis Newell, Kindle and Breger, 1.
sp., Kindle, 1.
Gomphognathus, Case, 6.
Gomphotherium serus n. sp., Douglass, 1.
Gonatosphæra prolata, Guppy, 4.
Goniatites de Haan, Smith (J. P.), 3.
choctawensis Shumard, Smith (J. P.), 3.
? colubrellus Morton, Smith (J. P.), 3.
crenistria Phillips, Smith (J. P.), 3.
delphiensis n. sp., Kindle, 1.
discoideus var. ohioensis Hall, Kindle, 1.
greencastlensis Miller and Gurley, Smith (J. P.), 3.
kentuckiensis Miller, Smith (J. P.), 3.
lunatus Miller and Gurley, Smith (J. P.), 3.
? minimus Shumard, Smith (J. P.), 3.
newsomi n. sp., Smith (J. P.), 3.
? parvus Shumard, Smith (J. P.), 3.
? politus Shumard, Smith (J. P.), 3.
sphæricus Martin, Smith (J. P.), 3.
striatus Sowerby, Smith (J. P.), 3.
subcircularis Miller, Smith (J. P.), 3.
wabashensis n. sp., Kindle, 1.
Gonilia Stoliczka, Dall, 8.
Goniobasis Lea, Letson, 1.
haldemani Tyron, Letson, 1.
judithensis n. sp., Stanton, Stanton and Hatcher, 1.
levescens (Menke) Tyron, Letson, 1.
var. niagarensis (Lea) Tyron, Letson, 1.
marylandica n. sp., Martin, 5.

Paleontology—Continued.

Genera and species described—Continued.

- Goniobasis ? ortmanni n. sp., Stanton, 4.
  - ? silberlingi n. sp., Stanton, 4
- Goniograptus McCoy, Ruedemann, 8.
  - geometricus n. sp., Ruedemann, 8.
  - perflexilis n. sp., Ruedemann, 8.
  - thureaui McCoy, Ruedemann, 4, 8.
- Gonioloboceras ? allei Winchell, Smith (J. P.), 3.
  - goniolobum Meek, Smith (J. P.), 3.
  - ? limatum Miller and Faber, Smith (J. P.), 3.
  - welleri n. sp., Smith (J. P.), 3.
- Goniopholis? gilmorei n. sp., Holland, 2.
- Goniophora carinatus (Hall), Weller, 6.
  - hamiltonensis Hall, Kindle, 1.
  - truncata Hall, Kindle, 1.
  - sp. undet., Weller, 6.
  - sp. indet., Parks, 5.
- Goodallia Turton, Dall, 8.
- Gouldia C B. Adams, Dall, 8.
- Gradilucina Cossmann, Dall, 8.
- Grallator E. Hitchcock, Lull, 2.
  - cuneatus E. Hitchcock, Lull, 2.
  - cursorius E. Hitchcock, Lull, 2.
  - formosus E. Hitchcock, Lull, 2.
  - gracilis C H. Hitchcock, Lull, 2.
  - tenuis E. Hitchcock, Lull, 2.
- Grammysia arcuata Hall, Kindle, 1.
  - constricta Hall, mut. pygmæa nov., Loomis, 4.
  - imbricata Rowley, Greene, 2.
  - secunda var. gibbosa H. and W., Kindle, 1.
  - subarcuata Hal ?, Kindle, 1.
  - n. sp., Shimer 5.
  - sp. undet., Weller, 6.
- Granatocrinites mihi, n. gen., Troost, Hambach, 1.
  - cidariformis mihi, Troost, Hambach, 1.
  - globosus mihi, Troost, Hambach, 1.
- Grateloupia Desmoulins, Dall, 8.
  - (Cytheriopsis) alumensis n. sp., Dall, 8.
- Graya argonauta Grove and Brun, Boyer, 1.
- Gresslya abducta Phillips sp., Madsen, 1.
  - gregaria (Zieten) Goldfuss sp., Madsen, 1.
  - peregrina Phillips sp., Madsen, 1.
- Gryphæa mexicana Felix, Cragin, 2.
  - mucronata Gabb, Shattuck, 8.
  - vesicularis Lamarck, Whiteaves, 12.
  - vesicularis Lamarck, Clark and Martin, 2.
- Gymnitidæ, Hyatt and Smith, 1.
- Gymnoptychus minimus n. sp., Matthew (W. D.), 9.

Paleontology—Continued.

Genera and species described—Continued.

- Gymnoptychus minor (Douglas), Matthew W D.), 9.
- Gymnotoceras Hyatt, Hyatt and Smith, 1.
- Gymnotoceras Hyatt, Smith (J. P.), 5.
- Gymnotropites n. subg., Hyatt and Smith, 1.
- Gymnusa (?) absens n. sp., Scudder, 1.
- Gypidula angulata n. sp., Weller, 6.
  - galeata (Dal.), Weller, 6.
  - galeata (Dal.) var., Weller, 6.
  - (Sieberella) galeatus Dalman, Kindle and Breger, 1.
  - (Sieberella) nucleus Hall and Whitfield, Kindle and Breger, 1.
  - romingeri var. indianensis nov. var., Kindle, 1.
- Gyrinus confinis LeC., Scudder, 1.
- Gyroceras burlingtonensis Owen, Weller, 2.
  - farcimen n. sp., Clarke and Ruedemann, 1.
  - indianense n. sp., Kindle, 1.
  - inelegans Meek?, Kindle, 1.
  - jason Hall, Kindle, 1.
- Gyrodendron n. gen., Ulrich, 4.
  - emersoni n. sp., Ulrich, 4.
- Gyrodes conradiana? Gabb, var.) canadensis, Whiteaves, 12.
  - siskiyouensis n. sp., Anderson, 3.
- Gyronema brevispira n. sp., Whiteaves, 17.
  - dowlingii n. sp., Whiteaves, 17.
  - speciosum n. sp., Whiteaves, 17.
- Gyronites Waagen, Smith (J. P.), 5.
- Gyronites Waagen, Hyatt and Smith, 1.
- Hadrianus majusculus n. sp., Hay, 13.
- Hadrocrinus plenissimus Lyon, Rowley, Greene, 11.
- Hadrophyllum linguloideum n. sp., Herzer, 5.
- Halmeophyllum ordinatum Billings, Greene, 15.
- Hallicystis Jaekel, Schuchert, 11.
  - elongata Jaekel, Schuchert, 11.
  - imago (Hall), Schuchert, 11.
- Haliotis Linné, Arnold, 2.
  - fulgens Philippi, Arnold, 2.
  - lomaënsis n. sp., Anderson, 3.
- Haliserites Sternberg White (D.), 6.
- Halobia Bronn, Smith (J. P.), 5.
  - superba Mojsisovics, Smith (J. P.), 5.
- Halonympha Dall and Smith, Dall, 8.
- Halorites Mojsisovics, Hyatt and Smith, 1.
  - americanus Hyatt, Hyatt and Smith, 1.
  - (Homerites) semiglobosus Hauer, Hyatt and Smith, 1.
- Haloritidæ Mojsisovics, Hyatt and Smith, 1.
- Halysites Fischer, Grabau, 1.

Paleontology—Continued.
Genera and species described—Continued.
Halysites agglomeratus Hall (sp.), Clarke and Ruedemann, 1.
  agglomeratus Hall, Whitfield, 7.
  catenularia (Linn.), Weller, 6.
  catenularius Linne (sp.), Clarke and Ruedemann, 1.
  catenulatus, Hayes and Ulrich, 1.
  catenulatus (Linn.), Grabau, 1.
  catenulatus Linn., Whitfield, 7.
  radiatus n. sp., Whitfield, 7.
Haminea Leach, Arnold, 2.
  virescens Sowerby, Arnold, 2.
  obstrictus Jimbo, Whiteaves, 12.
  solitaria Say, Sears, 1.
Hamites (Ptychoceras) æquicostatum Gabb, Anderson, 3.
  armatus n. sp., Anderson, 3.
  cylindraceus de France, Anderson, 3.
  ellipticus n. sp., Anderson, 3.
  phœnixensis n. sp., Anderson, 3.
  (Ptychoceras) solanoënse n. sp., Anderson, 3.
Haplocanthosaurus Hatcher, Riggs, 9.
Haplocanthosaurus, Hatcher, 14, 19.
  priscus, Hatcher, 14.
Haplocanthus priscus n. gen. and sp., Hatcher, 18.
  utterbachi n. sp., Hatcher, 14.
Hargeria n. gen., Lucas, 15.
  gracilis, Lucas, 15.
Harpagodes shumardi (Hill), Shattuck, 8.
Harpagolestes macrocephalus n. gen. et sp., Wortman, 5.
Harpalodon sylvestris Marsh, Wortman, 4.
Harpalus conditus n. sp., Scudder, 1.
Harpedactylus E. Hitchcock, Lull, 2.
  crassus E. Hitchcock, Lull, 2.
  gracilior E. Hitchcock, Lull, 2.
  tenuissimus E. Hitchcock, Lull, 2.
Harpina antiquatus Billings, Raymond (P. E.), 5.
  ottawensis (Bill.), Weller, 6.
  ottawaensis Billings, Raymond (P. E.), 5.
Harrisia parabola Cleland, Cleland, 3.
Hauericeras gardeni (Baily), Whiteaves, 12.
Hauerites Mojsisovics, Hyatt and Smith, 1.
  ashleyi n. sp., Hyatt and Smith, 1.
Hausmannia? californica n. sp., Fontaine, 3.
Hebertella borealis Billings, Hayes and Ulrich, 1.
  exfoliata n. sp., Raymond (P. E.), 7.
  sinuata Hall, Hayes and Ulrich, 1.
Hedenstrœmia Waagen, Hyatt and Smith, 1.
  kossmati n. sp., Hyatt and Smith, 1.

Paleontology—Continued.
Genera and species described—Continued.
Hedronchus sternbergii Cope, Stanton and Hatcher, 1.
Heilprinia n. gen., Grabau, 16.
  æqualis (Emmons), Grabau, 16.
  barbarensis (Trask), Grabau, 16.
  burnsii (Dall), Grabau, 16.
  caloosaensis (Heilprin), Grabau, 16.
  caloosaensis var. carolinensis (Dall), Grabau, 16.
  exilis (Conrad), Grabau, 16.
  robusta (Trask), Grabau, 16.
Helcion giganteus? var. vancouverensis, Whiteaves, 12.
  tenuicostatus n. sp., Whiteaves, 12.
Helcura E. Hitchcock, Lull, 2.
  anguinea E. Hitchcock, Lull, 2.
  littoralis E. Hitchcock, Lull, 2.
  surgens E. Hitchcock, Lull, 2.
Helenia granulata n. sp., Matthew (G. F.), 1.
Helicina occulta Say, Shimek, 8.
  rawsoni Pfeiffer, Dall, 15.
Helicoceras indicum (?) Stol., Anderson, 3.
  pariense White ?, Johnson (D. W.), 5.
  stevensoni, Whitfield, 1.
Helicoprion, Eastman, 6, 13.
Helicotoma? peccatonica n. sp., Sardeson, 2.
  vagrans n. sp., Raymond (P. E.), 7.
Heliolites Guettard, Grabau, 1.
  elegans Hall, Grabau, 1.
  pyriformis Guettard, Grabau, 1.
  spiniporus Hall, Grabau, 1.
Heliomera n. subgen., Raymond (P. E.), 7.
  sol (Billings), Raymond (P. E.), 7.
Heliophyllum adnascens n. sp., Greene, 5.
  ampliatum n. sp., Greene, 3.
  collatum n. sp., Greene, 2.
  conditum n. sp., Greene, 15.
  conglomeratum n. sp., Greene, 10.
  congregatum n. sp., Greene, 10.
  conigerum n. sp., Greene, 2.
  convergens (Hall), Greene, 9.
  crotalum n. sp., Greene, 7.
  dispansum n. sp., Greene, 7.
  gradatum n. sp., Greene, 14.
  halli E. & H., Shimer and Grabau, 1.
  hammelli n. sp., Greene, 2.
  ignotum n. sp., Greene, 5.
  inflexum n. sp., Greene, 15.
  mirum n. sp., Greene, 7.
  obliquum n. sp., Greene, 15.
  parvulum n. sp., Greene, 13.
  rowleyi n. sp., Greene, 1.
  spiculatum n. sp., Greene, 2.
  sulcatum, Greene, 14.

Paleontology—Continued.
Genera and species described—Continued.
Heliophyllum vesiculatum (Hall), Greene, 11.
    zenkeri (Billings), Greene, 9.
Helix (Epiphragmophora?) dubiosa nom. prov., Stearns (R. E. C.), 3.
    (Epiphragmophora) sp. indet., Arnold, 2.
Helminthoida Schafhäutl, Ulrich, 4.
    abnormis n. sp., Ulrich, 4.
    exacta n. sp., Ulrich, 4.
    subcrassa n. sp., Ulrich, 4.
    vaga n. sp., Ulrich, 4.
Helminthopsis? labyrinthica Heer, Ulrich, 4.
    magna Heer, Ulrich, 4.
Helodermoides tuberculatus n. gen. and sp., Douglass, 8.
Helodus incisus n. sp., Eastman, 10.
    rugosus Newberry and Worthen, Eastman, 10.
Helopora Hall, Grabau, 1.
    fragilis Hall, Grabau, 1.
Hemiacodon gracilis Marsh, Wortman, 14.
    pygmæus n. sp., Wortman, 14.
Hemiaster vancouverensis n. sp., Whiteaves, 15.
Hemipristis serra Agassiz, Eastman, 18.
Hemisurcula n. gen., Casey, 5.
Hemitapes Römer, Dall, 8.
Hemitrypa proutana Ulrich, Ulrich, 8.
Heptodon?, Douglass, 8.
Hercoceras auriculum n. sp., Parks, 5.
Hercoglossa tuomeyi n. sp., Clark and Martin, 2.
Here Gabb, Dall, 8.
Hesperhys n. gen., Douglass, 8.
    vagrans n. sp., Douglass, 8.
Hesperornis gracilis, Lucas, 15.
    regalis, Lucas, 15, 16.
Heteropora (?) tecta n. sp., Ulrich, 1.
Heteroceras ceratopse n. sp., Anderson, 3.
    elongatum n. sp., Whiteaves, 12.
    hornbyense Whiteaves, Whiteaves, 12.
    simplicostatum, Whitfield, 3.
Heterocildus n. subg., Dall, Dall, 8.
Heterodontus japonicus, Dean, 6.
Heteromeryx n. gen., Matthew (W. D.), 22.
    dispar n. sp., Matthew (W. D.), 22.
Heteronema n. gen., Ulrich and Bassler, 1.
    ? carbonarium n. sp., Ulrich and Bassler, 1.
    ? contextum n. sp., Ulrich and Bassler, 1.
Heterotrypa, Cumings, 7.
Heterotrypa Nicholson, Ulrich and Bassler, 2.
    foerstei n. sp., Nickles, 6.
    parvulipora n. sp., Ulrich and Bassler, 2.

Paleontology—Continued.
Genera and species described—Continued.
Heterotrypa parvulipora Ulrich and Bassler, Hayes and Ulrich, 1.
    parvulipora Ulrich and Bassler, Nickles, 6.
    subpulchella (Nicholson), Nickles, 6.
Hexalonche miscrosphæra Vinassa, Martin, 8.
Haxameroceras delphicolum Newell, Kindle and Breger, 1.
Hexastylus simplex Vinassa, Martin, 8.
Hicoria biacuminata n. sp., Perkins, 13, 17.
    magnifica n. sp., Knowlton, 16.
    ? oregoniana n. sp., Knowlton, 14.
Hicoroides n. gen., Perkins, 13, 17.
    angulata n. sp., Perkins, 13, 17.
    ellipsoidea n. sp., Perkins, 13, 17.
    globulus n. sp., Perkins, 13.
    parva n. sp., Perkins, 13.
    triangularis n. sp., Perkins, 13.
Hindia fibrosa (Roemer), Weller, 6.
    indianensis n. sp., Whitfield, 12.
    nodulosa, Whiteaves, 12.
    parva Ulrich, Weller, 6.
    parvula Ulrich, Weller, 6.
    ? perundosa n. sp., Sardeson, 9.
Hindsiella acuta Dall, Glenn, 6.
Hinnites Defrance, Arnold, 2.
Hipparion Christol, Gidley, 5.
    eurystylus (Cope), Gidley, 1.
Hipparionyx proximus (Van.), Weller, 6.
Hipponyx De France, Arnold, 2.
    antiquatus Linnæus, Arnold, 2.
    cranioides Carpenter, Arnold, 2.
    tumens Carpenter, Arnold, 2.
Holasaphus, Matthew (G. F.), 20.
    centropyge, Matthew (G. F.), 20.
Holcodiscus cfr. theobaldianus Stol., Anderson, 3.
Holectypus? sp., Cragin, 2.
Holocystis papulosus? M. & G., Rowley, Greene, 11.
Holopea antiqua (Van.), Weller, 6.
    conica Win., Weller, 2.
    hudsoni n. sp., Raymond (P. E.), 7.
    microclathrata n. sp., Hudson, 1.
    obesa Whitfield, Sardeson, 2.
    cfr. obliqua Hall, Sardeson, 1.
    ? raymondia n. sp., Cleland, 3.
    scrutator n. sp., Raymond (P. E.), 7.
    supraplana U. & S.?, Weller, 6.
    symmetrica Hall, Weller, 6.
    ? voluta n. sp., Cleland, 3.
    sp., Parks, 5.
Homacanthus Agassiz, Eastman, 10.
    acinaciformis n. sp., Eastman, 10.
    delicatulus n. sp., Eastman, 10.
Homalonotus Koenig, Grabau, 1.
    delphinocephalus (Green), Grabau, 1.
    vanuxemi Hall, Weller, 6.

Paleontology—Continued.

Genera and species described—Continued.

- Homerites Mojsisovics, Hyatt and Smith, 1.
- Homocrinus scoparius Hall, Talbot, 2.
- Homœospira Hall and Clarke, Grabau, 1.
  - apriniformis Hall, Grabau, 1.
  - evax Hall 1863, Beecher, 1.
  - sobrina n. sp., Beecher, 1.
- Homomya austinensis n. sp., Shattuck, 8.
  - vulgaris n. sp., Shattuck, 8.
- Homotrypa Ulrich, Bassler, 1.
  - austini n. sp., Bassler, 1.
  - bassleri n. sp., Nickles, 4.
  - bassleri Nickles, Bassler, 1.
  - cincinnatiensis n. sp., Bassler, 1.
  - communis n. sp., Bassler, 1.
  - curvata Ulrich, Bassler, 1.
  - curvata var, præcipta n. var., Bassler, 1.
  - cylindrica n. sp., Bassler, 1.
  - dawsoni (Nicholson), Bassler, 1.
  - dumosa n. sp., Bassler, 1.
  - flabellaris Ulrich, Bassler, 1.
  - flabellaris var. spinifera n. var., Bassler, 1.
  - frondosa n. sp., Bassler, 1.
  - frondosa (Edwards and Haime), Cumings, 7.
  - gelasinosa Ulrich, Bassler, 1.
  - grandis n. sp., Bassler, 1.
  - libana n. sp., Bassler, 1.
  - minnesotensis Ulr., Sardeson, 3.
  - nicklesi n. sp., Bassler, 1.
  - nodulosa n. sp., Bassler, 1.
  - nitida n. sp., Bassler, 1.
  - obliqua Ulrich, Bassler, 1.
  - pulchra n. sp., Bassler, 1.
  - ramulosa n. sp., Bassler, 1.
  - richmondensis n. sp., Bassler, 1.
  - splendens n. sp., Bassler, 1.
  - wortheni (James), Bassler, 1.
  - wortheni var. intercellata n. var., Bassler, 1.
  - wortheni var. prominens n. var., Bassler, 1.
- Homotrypella nodosa n. sp., Ulrich and Bassler, 2.
  - nodosa Ulrich and Bassler, Hayes and Ulrich, 1.
  - norwoodi n. sp., Nickles, 6.
- Honeoyea n. gen., Clarke, 19.
  - desmata n. sp., Clarke, 19.
  - erinacea n. sp., Clarke, 19.
  - major n. sp., Clarke, 19.
  - simplex n. sp., Clarke, 19.
  - styliophila n. sp., Clarke, 19.
- Hoplichnus E. Hitchcock, Lull, 2.
  - quadrupedans E. Hitchcock, Lull, 2.
- Hoplitosaurus n. gen., Lucas, 11.
- Hoploparia McCoy, Pilsbry, 1.
  - bennettii Woodward, Whiteaves, 12.
  - gabbi n. sp., Pilsbry, 1.
- Hoploparia grœnlandica n. sp., Ravn, 1.
- Hoplophoneus, Matthew (W. D.), 19.
- Hormotoma salteri Ulrich, Weller, 6.
  - whiteavesi n. sp., Clarke and Ruedemann, 1.
- Hughmilleria n. gen., Sarle, 2.
  - socialis n. sp., Sarle, 2.
  - socialis var. robusta n. var., Salre, 2.
- Hungarites Mojsisovics, Hyatt and Smith, 1.
  - yatesi n. sp., Hyatt and Smith, 1.
- Hungaritidæ, Hyatt and Smith, 1.
- Hustedia mormoni (Marcou), Beede, 1.
  - mormoni Marcou, Girty, 3.
- Hyænodon, Matthew (W. D.), 19, 20.
  - cruentus Leidy, Matthew (W. D.), 2.
  - montanus n. sp., Douglass, 4.
  - minutus n. sp., Douglass, 4.
- Hyænodontidæ, Matthew (W. D.), 19.
- Hyænognathus? (Porthocyon n. gen.?) dubius n. sp., Merriam (J. C.), 7.
  - pachyodon n. gen. and n. sp., Merriam (J. C.), 7.
- Hyalostelia sp., Girty, 3.
- Hyattella Hall and Clarke, Grabau, 1.
  - congesta (Conrad), Grabau, 1.
  - ? lamellosa n. sp., Weller, 6.
- Hyalæa tricuspida n. sp., Rivers, 1.
- Hydractinia multispinosa n. sp., Ulrich, 16.
- Hydrangea bendirei (Ward) Knowlton, 14.
- Hydreionocrinus depressus (Troost), Grabau, 8.
  - kansasensis Weller, Beede, 1.
  - subsinuatus Miller and Gurley, Beede, 1.
- Hydroporus inanimatus n. sp., Scudder, 1.
  - inundatus n. sp., Scudder, 1.
  - sectus n. sp., Scudder, 1.
- Hylopus Dawson, Matthew (G. F.), 28, 30.
  - caudifer Dawson, Matthew (G. F.), 25.
  - hardingi Dawson, Matthew (G. F.), 25, 28.
  - logani Dawson, Matthew (G. F.), 30.
  - ? minor Dawson, Matthew (G. F.), 30.
- Hyolithellus? flexuosus n. sp., Matthew (G. F.), 1.
  - micans Billings, Matthew (G. F.), 1.
  - micans Billings, Ruedemann, 2.
  - micans Billings, Sears, 1.
- Hyolithes acadicus, Matthew (G. F.), 7.
  - americanus Billings, Sears, 1.
  - carinatus, Matthew (G. F.), 7.
  - caudatus, Matthew (G. F.), 7.

Paleontology—Continued.
Genera and species described—Continued.
Hyolithes centennialis Barrett, Weller, 6.
communis Billings, Sears, 1.
danianus, Matthew (G. F.), 7.
excellens Bill., Matthew (G. F.), 1.
exeellens Billings, Sears, 1.
gracilis, Matthew (G. F.), 7.
gracillimus, Matthew (G. F.), 8.
gracillimus n. mut., Matthew (G. F.), 7.
impar Ford, Sears, 1.
neapolis Clarke, Clarke, 19.
princeps Billings, Sears, 1.
princeps *forma* pingreei Sears, Sears, 1.
rhine n. sp., Ruedemann, 2.
rugosus n. sp., Matthew (G. F.), 1.
searsi Grabau, Sears, 1.
sericeus, Matthew (G. F.) 7.
cf. tenuistriatus Linrs., Matthew (G. F.), 20.
Hyopsodidæ Schlosser, Loomis, 7.
Hyopsodus Leidy, Loomis, 7.
Hyopsodus Leidy, Osborn, 11.
browni n. sp., Loomis, 7.
(Lemuravus) distans Marsh, Osborn, 11.
jacksoni n. sp., Loomis, 7.
laticuneus Cope, Loomis, 7.
lemoinianus Cope, Loomis, 7.
lemoinianus Cope, Osborn, 11.
marshi n. sp., Osborn, 11.
minor n. sp., Loomis, 7.
miticulus Cope, Loomis, 7.
(Esthonyx) ? miticulus Cope, Osborn, 11.
paulus, Osborn, 11.
powellianus Cope, Osborn, 11.
powellianus Cope, Loomis, 7.
simplex n. sp., Loomis, 7.
uintensis n. sp., Osborn, 11.
vicarius Cope, Osborn, 11.
wortmani n. sp., Osborn, 11.
wortmani Osborn, Loomis, 7.
Hypertragulus, Matthew (W. D.), 22.
Hypertragulus Cope, Matthew (W. D.), 7.
sp., Sinclair, 6.
Hyphantosoma Dall, Dall, 8.
Hyphepus E. Hitchcock, Lull, 2.
fieldi E. Hitchcock, Lull, 2.
Hypisodus Cope, Matthew (W. D.), 2, 7, 22.
minimus Cope, Matthew (W. D.), 7.
Hypocetus Lydekker, Case, 9.
mediatlanticus (Cope), Case, 9.
Hypohippus Leidy, Gidley, 5.
Hyrachyus, Douglass, 8.
? priscus n. sp., Douglass, 8.
Hyracodon priscidens n. sp., Lambe, 17.
sp., Matthew (W. D.), 9.
Hysteroconcha Fischer, Dall, 8.
Hystriospongia ? sp., Girty, 3.

Paleontology—Continued.
Genera and species described—Continued.
Icanotia Stoliczka, Dall, 8.
Ichthycrinus Conrad, Grabau, 1.
lævis Conrad, Grabau, 1.
Icthyocrinus magnaradialis n. sp., Weller, 6.
schucherti n. sp., Talbot, 2.
Ichthyodectes Cope, Loomis, 1.
Ichthyodectes Cope, Stewart 1.
acanthicus Cope?, Stewart, 1.
anaides Cope, Hay, 10.
anaides Cope, Loomis, 1.
anaides Cope, Stewart, 1.
cruentus Hay, Stewart, 1.
ctenodon Cope, Loomis, 1.
ctenodon Cope, Stewart, 1.
hamatus Cope, Loomis, 1.
hamatus Cope, Stewart, 1.
multidentatus Cope, Hay, 10.
multidentatus Cope, Loomis, 1.
occidentalis Leidy, Loomis, 1.
Ichthyoidichnites acadiensis n. sp., Ami, 3, 28.
Ichthyosaurus Merriam (J. C.), 6, 9.
Ictops, Douglass, 9.
acutidens n. sp., Douglass, 4.
acutidens Douglass, Matthew (W. D.), 9.
acutidens Douglass, Douglass, 9.
didelphoides Cope, Douglass, 9.
intermedius n. sp., Douglass, 9.
major n. sp., Douglass, 9.
montanus n. sp., Douglass, 9.
tenuis n. sp., Douglass, 9.
thomsoni n. sp., Matthew (W. D.), 9.
thompsoni Matthew, Douglass, 9.
Idiophyllum rotundifolium Lesquereux, Sellards, 4.
Idmonea ? expansa n. sp., Ulrich and Bassler, 4.
Igoceras undata (Win.), Weller, 2.
Illænurus columbiana n. sp., Weller, 6.
Illænus Dalman, Grabau, 1.
americanus Billings, Ruedemann, 2.
armatus Hall, Kindle and Breger, 1.
bayfieldi Billings, Raymond (P. E.), 5.
erastusi n. sp., Raymond (P. E.), 5.
globosus Billings, Raymond (P. E.), 5.
indeterminatus Walcott, Raymond (P. E.), 5.
insignis Hall, Kindle and Breger, 1.
ioxus Hall, Kindle and Breger, 1.
ioxus Hall, Grabau, 1.
punctatus n. sp., Raymond (P. E.), 5.
sp. indet., Whiteaves, 17.
Illicium lignitum Lx., Perkins, 13.
Ilyanassa? (Paranassa) porcina (Say), Martin, 5.
Incolaria securiformis Herz., Herzer, 4.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Indiana, Matthew (G. F.), 20.
    - lippa n. sp., Matthew (G. F.), 13, 20.
    - ovalis n. sp., Matthew (G. F.), 13, 20.
    - ovalis mut. prima, Matthew (G. F.), 20.
  - Indrodon malaris Cope, Osborn, 11.
  - Inoceramus adunca n. sp., Anderson, 3.
    - balchii M. and H., Johnson (D. W.), 5.
    - cripsii var. barabini Morton, Johnson (D. W.), 5.
    - digitatus (Sowerby) Schmidt, Whiteaves, 12.
    - dimidius White, Johnson (D. W.), 5.
    - fragilis H. and M., Johnson (D. W.), 5.
    - irregularis n. sp., Johnson (D. W.), 5.
    - klamathensis n. sp., Anderson, 3.
    - labiatus Schlotheim, Johnson (D. W.), 5.
    - simpsoni Meek, Johnson (D. W.), 5.
    - vanuxemi M. and H., Johnson (D. W.), 5.
    - n. sp. ?, Johnson (D. W.), 5.
    - sp., Shattuck, 8.
  - Insectivora Matthew (W. D.), 19.
  - Inoceramya n. gen., Ulrich, 4.
    - concentrica n. sp., Ulrich, 4.
  - Inyoites n. gen., Hyatt and Smith, 1.
    - oweni n. sp., Hyatt and Smith, 1.
  - Iphidea pannula White sp., Matthew (G. F.), 19.
  - Iphidella n. gen., Walcott, 12.
    - labradorica orientalis n. var., Walcott, 12.
    - labradorica utahensis n. var., Walcott, 12.
    - major n. sp., Walcott, 12.
    - nisus n. sp., Walcott, 12.
    - pannula maladensis n. var., Walcott, 12.
    - pannula ophirensis n. var., Walcott, 12.
    - sp. und., Walcott, 12.
  - Isapis H. and A. Adams, Arnold, 2.
  - Ischnochiton Gray, Arnold, 2.
    - regularis Carpenter, Arnold, 2.
  - Ischyrocyon n. gen., Matthew, Matthew and Gidley, 1.
    - hyænodus n. sp., Matthew, Matthew and Gidley, 1.
  - Ischyromyidæ, Matthew (W. D.), 19.
  - Ischyromys veterior n. sp., Matthew (W. D.), 9.
  - Isocampe E. Hitchcock, Lull, 2.
    - strata E. Hitchcock, Lull, 2.
  - Isocardia cliffwoodensis n. sp., Weller, 10.
    - fraterna Say, Glenn, 6.
    - ignolea n. sp., Glenn, 6.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Isocardia markoei Conrad, Glenn, 6.
    - mazlea n. sp., Glenn, 6.
    - medialis (Conrad), Shattuck, 8.
  - Isochilina Jones, Grabau, 1.
    - armata var. pygmæa n. var., Ruedemann, 2.
    - cylindrica (Hall), Grabau, 1.
    - gregaria Whitfield, var. (?), Jones (T. R.), 2.
    - gregaria (Whitfield), var. ulrichiana, nov., Jones (T. R.), 2.
    - sp. ?, Jones (T. R.), 2.
  - Isodomo (Deshayes) Cossmann, Dall, 8.
  - Isomena humilus Meek ?, Kindle, 1.
  - Isopora Studer, 1878, Vaughan, 2.
    - muricata (Linnæus) forma muricata s. s. (= cervicornis Lamarck), Vaughan, 2.
  - Isotelus angusticaudum n. sp., Raymond (P. E.), 5.
    - ? bearsi n. sp., Raymond (P. E.), 5.
    - canalis Whitf., Weller, 6.
    - florencevillensis n. n. (Isotelus susæ Clarke, not Whitfield), Calvin, 10.
    - gigas De Kay, Weller, 6.
    - harrisi n. sp., Raymond (P. E.), 5.
    - maximus Locke, Ruedemann, 2.
    - obtusum Hall, Raymond (P. E.), 5.
    - susæ Whitfield, Calvin, 10.
  - Isurus mantelli (Geinitz), Williston, 1.
  - Ivara D. and B. (MSS.), Arnold, 2.
  - Ixacanthus Cope, Case, 9.
    - atropius Cope, Case, 9.
    - cœlospondylus Cope, Case, 9.
    - conradi (Leidy), Case, 9.
    - spinosus Cope, Case, 9.
    - stenus Cope, Case, 9.
  - Ixartia Leach, Dall, 8.
  - Jækelocystis n. gen., Schuchert 6, 11.
    - avellana n. sp., Schuchert, 11.
    - hartleyi n. sp., Schuchert, 6, 11.
    - papillatus n. sp., Schuchert, 11.
  - Jagonia Récluz, Dall, 8.
  - Jamesella n. subg. of Nisusia, Walcott, 12.
  - Janassa maxima n. sp., Eastman, 10.
    - ungulla n. sp., Eastman, 10.
  - Joannites Mojsisovics, Hyatt and Smith, 1.
    - nevadanus n. sp., Hyatt and Smith, 1.
  - Juglans? bendirei n. sp., Knowlton, 14.
    - brandonianus n. sp., Perkins, 13, 17.
    - crassifolia n. sp., Knowlton, 14.
    - cryptata n. sp., Knowlton, 14.
    - oregoniana Lesq., Knowlton, 14.
  - Juniperus hypnoides Heer(?), Hollick, 4.
  - Juvavites Mojsisovics, Hyatt and Smith, 1.

Paleontology—Continued.
Genera and species described—Continued.
Juvavites (Anatomites) mojsvari n. sp., Burckhardt and Scalia, 1.
    (Anatomites) subintermittens n. sp., Hyatt and Smith, 1.
    subinterruptus Mojsisovics, Hyatt and Smith, 1.
Kadaliosaurus Credner, Osborn, 19.
Katelysia (Römer) Tryon, Dall, 8.
Kellia Turton, Arnold, 2.
    laperousii Deshayes, Arnold, 2.
    rotundula n. sp., Glenn, 6.
    suborbicularis Montagu, Arnold, 2.
Kennerleyia Cpr. (em.), Dall, 8.
Kennerlia Carpenter, Arnold, 2.
Kingena occidentalis n. sp., Whiteaves, 12.
Kionoceras cancellatum (Hall), Whiteaves, 17.
    darwini Billings (sp.), Clarke and Ruedemann, 1.
    medullare Hall (sp.), Clarke and Ruedemann, 1.
Kirkbya sp., Girty, 3.
Kochia Frech, Clarke, 19.
    ungula n. sp., Clarke, 19.
Koninckites Waagen, Smith (J. P.), 5.
Koninckites Waagen, Hyatt and Smith, 1.
Kutorgina Billings, Walcott, 12.
    cingulata Billings, Walcott, 12.
    granulata n. sp., Matthew (G. F.), 1.
    perugata n. sp., Walcott, 12.
    sardiniaensis n. sp., Walcott, 12.
    sp. und., Walcott, 12.
Labidosaurus hamatus Cope, Broili, 2.
Labiosa (Schmidt) Möller, Arnold, 2.
    (Raeta) undulata Gould, Arnold, 2.
    (Raeta) sp., Glenn, 6.
Lacuna Turton, Arnold, 2.
    compacta Carpenter, Arnold, 2.
    porrecta Carpenter, Arnold, 2.
    solidula (Lovén) Carpenter, Arnold, 2.
Lævicardium Swainson, Arnold, 2.
Lagena apiculata Reuss, Bagg, 9.
    globosa (Montagu), Bagg, 9.
    gracilis Williamson, Bagg, 9.
    marginata (Walker and Boys), Bagg, 9.
    sulcata (Walker and Jacobs), Bagg, 9.
Lagunculapes E. Hitchcock, Lull, 2.
    latus E. Hitchcock, Lull, 2.
Lamellaria Montagu, Arnold, 2.
    stearnsii Dall, Arnold, 2.
Lamelliconcha Dall, Dall, 8.
Lamna appendiculata Agassiz, Whiteaves, 12.
    appendiculata (Römer), Williston, 1.
    macrorhiza Cope, Williston, 1.
    mudgei Cope, Williston, 1.

Paleontology—Continued.
Genera and species described—Continued.
Lamna quinquelateralis Cragin, Williston, 1.
    sulcata (Geinitz), Williston, 1.
    sp., Williston, 1.
    (Odontaspis?) sp., Williston, 1.
Lampsilis Rafinesque, Letson, 1.
    ellipsiformis (Conr.) Simpson, Letson, 1.
    rectus (Lam.) Smith, Letson, 1.
Lampterocrinus? comptus n. sp., Rowley, 3.
Lancea Pease, Arnold, 2.
Lanceolites n. gen., Hyatt and Smith, 1.
    compactus n. sp., Hyatt and Smith, 1.
Laqueus Dall, Arnold, 2.
    jeffreysi Dall, Arnold, 2.
Laricopsis longifolia latifolia n. var., Fontaine, 4.
Lasiograptus mucronatus (Hall), Weller, 6.
    fischeri Heer, Penhallow, 4.
Laternula Bolton, Dall, 8.
Lathrobium antiquatum n. sp., Scudder, 1.
    debilitatum n. sp., Scudder, 1.
    exesum n. sp., Scudder, 1.
    frustum n. sp., Scudder, 1.
    inhibitum n. sp., Scudder, 1.
Latirus elaboratus n. sp., Aldrich, 2.
    marylandicus n. sp., Clark and Martin, 2.
Laurophyllum angustifolium Newb., Berry, 5.
Laurus angusta Heer, Hollick, 11.
    hollæ Heer, Berry, 5.
    hollicki n. sp., Berry, 5, 7.
    oregoniana n. sp., Knowlton, 14.
    plutonia Heer, Berry, 5, 7.
    proteæfolia Lesq., Berry, 5, 6, 7.
Lazaria Conrad, Arnold, 2.
    subquadrata Carpenter, Arnold, 2.
Lecanites Mojsisovics, Hyatt and Smith, 1.
    knechti n. sp., Hyatt and Smith, 1.
    vogdesi n. sp., Hyatt and Smith, 1.
Lecanocrinus hemisphericus n. sp., Rowley, 3.
    macropetalus Hall, Grabau, 1.
Leconteia n. gen., Hyatt and Smith, 1.
    californica n. sp., Hyatt and Smith, 1.
Leda Schumacher, Arnold, 2.
    concentrica (Say), Glenn, 6.
    cliftonensis n. sp., Clark and Martin, 2.
    cultelliformis (Rogers), Clark and Martin, 2.
    fossa Baird, Arnold, 2.
    hamata Carpenter, Arnold, 2.
    improcera (Conrad), Clark and Martin, 2.
    liciata (Conrad), Glenn, 6.
    liciata var. amydra Dall, Glenn, 6.

Paleontology—Continued.

Genera and species described—Continued.

- Leda minuta Fabr. var. præcursor n. var., Arnold, 2.
  - ? navicula n. sp., Cragin, 2.
  - parilis (Conrad), Clark and Martin, 2.
  - var., Clark and Martin, 2.
  - parva (Rogers), Clark and Martin, 2.
  - potomacensis n. sp., Clark and Martin, 2.
  - rostellata Conrad, mut. pygmæa nov., Loomis, 4.
  - saccata (Win.), Weller, 2.
  - taphria Dall, Arnold, 2.
  - tysoni n. sp., Clark and Martin, 2.
  - sp., Dall, 10.
- Leiomya A. Adams, Dall, 8.
- Leioclema? sp., Girty, 3.
- Leiorhynchus huronensis Nicholson, Shimer and Grabau, 1.
  - laura Billings, Shimer and Grabau, 1.
  - limitare (Vanuxem), Kindle, 1.
  - multicostus Hall, Shimer and Grabau, 1.
  - quadricostatum (Vanuxem), Kindle, 1.
- Leperditella ornata n. sp., Weller, 6.
- Leperditia Rouault, Grabau, 1.
  - alta (Con.), Weller, 6.
  - altoides n. sp., Weller, 6.
  - balthica Hisinger var. guelphica Jones, Clarke and Ruedemann, 1.
  - elongata n. sp., Weller, 6.
  - fabulites .Conrad sp., Ruedemann, 2.
  - fabulites (Con.), Weller, 6.
  - gigantea n. sp., Weller, 6.
  - limatula n. sp., Raymond (P. E.), 7.
  - resplendens n. sp., Ruedemann, 2.
  - ? rugosa, Matthew (G. F.), 20.
  - ?? rugosa n. sp., Matthew (G. F.), 13.
  - scalaris Jones, Grabau, 1.
  - sp., Girty, 3.
- Lepidechinus Hall, Klem, 1.
  - imbricatus Hall, Klem, 1.
  - rarispinus Hall, Klem, 1.
- Lepidesthes Meek and Worthen, Klem, 1.
  - colletti White, Klem, 1.
  - coreyi Meek and Worthen, Klem, 1.
  - formosus Miller, Klem, 1.
  - spectabilis Worthen and Miller, Klem, 1.
  - wortheni Jackson, Klem, 1.
- Lepidocardia Dall, Dall, 8.
- Lepidocidaris Meek and Worthen, Klem, 1.
  - squamosus Meek and Worthen, Klem, 1.
- Lepidocoleus jamesi Hall and Whitfield sp., Ruedemann, 2.

Paleontology—Continued.

Genera and species described—Continued.

- Lepidocystis inquisitus D. W., White (D.), 18.
  - siliqua (Dn.) D. W., White (D.), 18.
- Lepidodendron keyesi n. sp., Herrick (C. L.), 3.
  - socorroense n. sp., Herrick (C. L.), 3.
  - thwaitesi n. sp., Herrick (C. L.), 3.
  - thwaitesi var. striolatum n. var., Herrick (C. L.), 3.
  - sp.?, Herrick (C. L.), 3.
- Lepidodiscus alleganius n. sp., Clarke, 3.
- Lepidostrobus, Smith, 1.
  - ? globosus Dn., White (D.), 18.
- Lepidotus haydeni Leidy, Stanton and Hatcher, 1.
- Lepidotus occidentalis Leidy, Lambe, 3.
  - occidentalis Leidy, Stanton and Hatcher, 1.
- Lepocrinites Conrad, Schuchert, 11.
  - gebhardii Conrad, Schuchert, 11.
  - manlius n. sp., Schuchert, 11.
- Lepralia labiosa n. sp., Ulrich, 2.
  - maculata n. sp., Ulrich and Bassler, 4.
  - marylandica n. sp., Ulrich and Bassler, 4.
  - montifera n. sp., Ulrich and Bassler, 4.
  - ? reversa n. sp., Ulrich and Bassler, 4.
  - subplana n. sp., Ulrich, 2.
- Leptæna Dalman, Grabau, 1.
  - minnesotensis n. sp., Sardeson, 9.
  - præcosis n. sp., Sardeson, 9.
  - recedens n. sp., Sardeson, 9.
  - rhomboidalis (Wahlenberg), Grabau, 1.
  - saxea n. sp., Sardeson, 9.
  - rhomboidalis Wilckens, 1769, Beecher, 1.
  - rhomboidalis (Wilckens), Kindle, 1.
  - rhomboidalis Wilckens, Ruedemann, 2.
  - rhomboidalis (Wilck.), Weller, 2.
  - rhomboidalis Wilckens, Kindle and Breger, 1.
  - rhomboidalis Wilck., Weller, 6.
  - rhomboidalis (Wilck.), var. ventricosa (Hall), Weller, 6.
- Leptaxinus Verrill and Bush, Dall, 8.
- Leptesthes Meek, Dall, 8.
- Leptictidæ, Matthew (W. D.), 19.
- Leptichthys, Stewart, 1.
  - agilis n. sp., Stewart, 1.
- Leptobolus Hall, Matthew (G. F.), 20.
  - atavus n. sp., Matthew (G. F.), 2, 20.
  - atavus mut. insulæ n. mut., Matthew (G. F.), 20.
  - atavus mut. tritavus n. mut., Matthew (G. F.), 20.

Paleontology—Continued.

Genera and species described—Continued.

- Leptobolus ? collicia n. sp., Matthew (G. F.), 2, 20.
  - collicia var. collis n. var., Matthew (G. F.), 20.
  - flumenis n. sp., Matthew (G. F.), 20.
  - gemmulus, Matthew (G. F.), 20.
  - cf. grandis, Matthew (G. F.), 19.
  - cf. linguloides, Matthew (G. F.), 12, 20.
  - torrentis n. sp., Matthew (G. F.), 20.
  - walcotti n. sp., Ruedemann, 1.
- Leptocheirus n. gen., Merriam (J. C.), 6.
  - zitteli n. sp., Merriam (J. C.), 6.
- Leptochœrus Leidy, Matthew (W. D.), 2.
  - quadricuspis n. sp., Hatcher, 3.
- Leptocodon rectus Williston, Stewart, 1.
- Leptodesma marcellense Hall, Wood (Elvira), 1.
  - rogersi Hall, Kindle, 1.
- Leptodomus interplicatus n. sp., Clarke, 19.
  - multiplex n. sp., Clarke, 19.
- Leptomeryx, Matthew (W. D.), 22.
- Leptomeryx Leidy, Matthew (W. D.), 7.
  - esulcatus Cope, Matthew (W. D.), 7.
- Leptomeryx? esulcatus Cope, Matthew (W. D.), 9.
  - mammifer Cope, Matthew (W. D.), 7, 9.
  - semicinctus Cope, Matthew (W. D.), 7.
  - transmontanus n. sp., Douglass, 8.
  - sp. indesc., Matthew (W. D.), 7.
- Leptophloeum rhombicum Dn., White (D.), 18.
- Leptophyllia sp. (No. 1), Vaughan, 17.
  - sp. (No. 2), Vaughan, 17.
- Leptopora ramosa n. sp., Rowley, 1.
  - procera n. sp., Rowley, 1.
  - typa Win., Weller, 2.
  - winchelli White, Girty, 3.
- Leptopsis levettei, White, Rowley, Greene, 2.
- Leptosomus Marck, Hay, 10.
  - lineatus (Cope), Hay, 10.
  - nasutulus (Cope), Hay, 10.
  - percrassus (Cope), Hay, 10.
- Leptostrobus longifolius Fontaine, Fontaine, 5.
  - ? ovalis Ward nom. nov., Fontaine, 5.
- Leptostyrax bicuspidatus Williston, Williston, 1.
- Leptosurcula n. gen., Casey, 5.
- Leptothyra Carpenter, Arnold, 2.
  - bacula Carpenter, Arnold, 2.
  - carpenteri Pilsbry, Arnold, 2.
  - paucicostata Dall, Arnold, 2.
- Leptotrachylus longipinnis Cope, Hay, 10.

Paleontology—Continued.

Genera and species described—Continued.

- Leptotragulus profectus n. sp., Matthew (W. D.), 9.
- Leptotrypa Ulrich, Ulrich and Bassler, 2.
- Lestosaurus gracilis Marsh, Williston, 10.
- Leuciscus turneri n. sp., Lucas, 4.
- Levifusus trabeatus (?) Conrad, Clark and Martin, 2.
  - trabeatus (?) var., Clark and Martin, 2.
- Lianophycus polyfrons n. gen. and sp., Herzer, 4.
- Lichas Dalman, Grabau, 1.
  - boltoni (Bigsby), Grabau, 1.
  - nereus Hall, Van Ingen, 2.
  - pustulosus Hall, Weller, 6.
  - sp., Kindle, 1.
- Lichenalia Hall, Grabau, 1.
  - concentrica Hall, Grabau, 1.
  - concentrica Hall, Grant (C. C.), 10.
  - torta Hall, Weller, 6.
- Lima interlineata n. sp., Cragin, 2.
  - multiradiata Gabb, Weaver, 1.
  - (Ctenostreon) riograndensis n. sp., Cragin, 2.
  - (Bruguière) Cuvier, Arnold, 2.
  - (Mantellum) dehiscens Conrad, Arnold, 2.
  - papyria (Conrad), Glenn, 6.
  - retifera Shumard, Beede, 1.
  - shumardi n. sp., Shattuck, 8.
  - suciensis n. sp., Whiteaves, 12.
  - wacoensis Römer, Shattuck, 8.
  - sp., Shattuck, 8.
  - sp. ind., Whiteaves, 8.
  - sp., Beede, 8.
- Limnæa Lamarck, Letson, 1.
  - catascopium Say, Letson, 1.
  - columella Say, Letson, 1.
  - desidiosa Say, Letson, 1.
- Limnenetes sp., Matthew (W. D.), 9.
- Limnenentes (?) anceps n. sp., Douglass, 4.
  - platyceps n. gen. and sp., Douglass, 4.
- Limipecten n. gen., Girty, 5.
  - texanus n. sp., Girty, 5.
  - texanus var. grandicostatus n. var., Girty, 5.
- Limnocyon Marsh, Wortman, 11.
  - dysodus, Wortman, 11.
  - medius n. sp., Wortman, 11.
  - velox Marsh, Wortman, 11.
  - verus Wortman, 11.
- Limnopus vagans Marsh, Matthew (G. F.), 25.
- Limnotherium affine Marsh, Osborn, 11.
- Limoptera cancellata Hall, Kindle, 1.
- Limopteria alata (Beede), Beede, 1.
  - gibbosa (Meek and Worthen), Beede, 1.
  - longispina (Cox), Beede, 1.
  - marian (White), Beede, 1.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Limopteria subalata (Beede and Rogers), Beede, 1.
  - Lindigia (?) nodosum n. sp., Anderson, 3.
  - Linearia ? divaricata n. sp., Johnson (C. W.), 1.
  - Lingula Bruguiere, Grabau, 1.
    - aurora Hall, Sardeson, 2.
    - brainerdi n. sp., Raymond (P. E.), 1.
    - carbonaria Shumard, Girty, 3.
    - columba n. sp., Raymond (P. E.), 7.
    - cuneata Conrad, Grabau, 1.
    - dolata n. sp., Sardeson, 2.
    - ? lens n. sp., Matthew (G. F.), 9.
    - morsii N. H. Winchell, Sardeson, 1.
    - mosia Hall, Sardeson, 2.
    - mytiloides Sowerby, Beede, 1.
    - ? ovata n. sp., Cleland, 3.
    - philomela Bill. ?, Weller, 6.
    - riciniformis Hall, Weller, 6.
    - spatulata Vanuxem, Kindle, 1.
    - tighti Herrick, Girty, 3.
    - winona Hall, Sardeson, 2.
  - Lingulasma galenensis W. & S., Weller, 6.
  - Lingulella concina n. sp., Matthew (G. F.), 9, 20.
    - cfr. davisii McCoy, Matthew (G. F.), 12, 20.
    - ? escasoni n. sp., Matthew (G. F.), 9.
    - gregwa n. sp., Matthew (G. F.), 2.
    - lævis var. grandis n. var., Matthew (G. F.), 20.
    - lævis var. lens, Matthew (G. F.), 20.
    - cfr. lepis, Matthew (G. F.), 12.
    - longovalis n. sp., Matthew (G. F.), 20.
    - cf. longovalis, Matthew (G. F.), 20.
    - macconnelli Walcott, Matthew (G. F.), 19.
    - radula var. aspera n. var., Matthew (G. F.), 20.
    - roberti n. sp., Matthew (G. F.), 20.
    - selwyni, Matthew (G. F.), 20.
    - stoneana Whitf., Weller, 6.
    - tumida n. sp., Matthew (G. F.), 2, 20.
  - Lingulepis Hall, Matthew (G. F.), 20.
    - gregwa, Matthew (G. F.), 20.
    - gregwa var. robusta n. var., Matthew (G. F.), 20.
    - longinervis n. sp., Matthew (G. F.), 20.
    - pumila n. sp., Matthew (G. F.), 20.
    - rotunda n. sp., Matthew (G. F.), 20.
    - starri var. Matthew (G. F.), 20.
    - starri mut. exigua n. mut., Matthew (G. F.), 20.
  - Lingulops norwoodi (James), Hayes and Ulrich, 1.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Linnarssonella n. gen., Walcott, 6.
  - Linnarssonia cf. belti Davidson ?, Matthew (G. F.), 20.
    - girtyi n. sp., Walcott, 6.
    - minuta Hall and Whitfield (sp.), Walcott, 6.
    - tennesseensis n. sp., Walcott, 6.
  - Linuparus canadensis Whiteaves, Whiteaves, 12.
    - vancouverensis Whiteaves, Whiteaves, 12.
  - Lioconcha Mörch, Dall, 8.
  - Liocyma Dall, Dall, 8.
  - Lioclema Ulrich, Ulrich and Bassler, 2.
  - Lioclema Ulrich, Grabau, 1.
    - aspera (Hall), Grabau, 1.
    - florida (Hall), Grabau, 1.
    - monroei n. sp., Ulrich and Bassler, 2.
    - punctatum (Hall), Ulrich and Bassler, 2.
  - Lioclemella Foerste, Ulrich and Bassler, 2.
    - ohioensis (Foerste), Ulrich and Bassler, 2.
  - Liopteria Hall, Grabau, 1.
    - (?) subplana (Hall), Grabau, 1.
  - Liorhynchus limitare (Vanuxem), Wood (Elvira), 1.
  - Liospira americana Billings sp., Ruedemann, 2.
    - micula (Hall), Weller, 6.
    - strigata n. sp., Collie, 3.
    - subtilistriata Hall sp., Ruedemann, 2.
    - sp. undet., Weller, 6.
  - Liquidambar europæum patulum n. var., Knowlton, 14.
    - pachyphyllum n. sp., Knowlton, 14.
    - sp. (?), Knowlton, 14.
  - Liriodendron, Berry, 1.
  - Liriodendropsis angustifolia Newb., Berry, 7.
  - Lirodiscus Conrad, Dall, 8.
    - protractus O. Meyer, Dall, 8.
    - wallesii n. sp., Dall, 8.
  - Lirophora Conrad, Dall, 8.
  - Lirosoma sulcosa Conrad, Martin, 5.
  - Lithasteriscus radiatus Ehrenberg, Martin, 8.
  - Lithocampe marylandica n. sp., Martin, 8.
  - Lithodomus nitidus n. sp., Whiteaves, 12.
  - Lithodrumus n. gen., Greene, 12.
    - veryi n. sp., Greene, 12.
  - Lithophaga Bolten, Arnold, 2.
    - ionensis n. sp., Glenn, 6.
    - marylandica n. sp., Clark and Martin, 2.
    - minuta n. sp., Weller, 2.
    - plumula Hanley, Arnold, 2.
    - subalveata Conrad, Glenn, 6.
  - Lithostrotion Fleming, Lambe, 2.
    - ? canadense, Ulrich, 8.

Paleontology—Continued.
Genera and species described—Continued.
Lithostrotion harmodites Edwards and Haime, Ulrich, 8.
  macouni Lambe, Lambe, 2.
  ? proliferum Hall, Ulrich, 8.
Litiopa marylandica n. sp., Clark and Martin, 2.
Littorina Ferussac, Arnold, 2.
  irrorata (Say), Martin, 5.
  planaxis (Nuttall) Philippi, Arnold, 2.
  scutulata Gould, Arnold, 2.
Lituites (Ophidioceras) bickmoreanus Whitfield, Kindle and Breger, 1.
  (Ophidioceras) hercules carrollensis n. var., Kindle and Breger, 1.
  marshii Hall, Kindle and Breger, 1.
Lobocrinus dubius n. sp., Rowley, 2.
  (?) dubius var. pustulosus n. var., Rowley, 2.
  (?) insolitus n. sp., Rowley, 2.
Loganograptus Hall, Ruedemann, 8.
  logani Hall, Ruedemann, 8.
Lonchodomas halli Billings, Raymond (P. E.), 5.
Longobardites Mojsisovics, Hyatt and Smith, 1.
  nevadanus n. sp., Hyatt and Smith, 1.
Lonsdaleia McCoy, Lambe, 2.
  (or Lithostrotion) canadense (Castelnau), Hayes and Ulrich, 1.
  picroense Billings (sp.), Lambe, 2.
Loperia n. subg. of Protorthis, Walcott, 12.
Lophoblastus n. gen., Rowley, 1.
  conoideus n. sp., Rowley, 1.
  marginulus n. sp., Rowley, 1.
  pentagonus n. sp., Rowley, 4.
Lophocetus Cope, Case, 9.
  calvertensis (Harlan), Case, 9.
Lophophyllum profundum (Milne-Edwards and Haime), Beede, 1.
  profundum Milne-Edwards and Haime, Girty, 3.
  westi (Beede), Beede, 1.
Lophospira billingsi n. sp., Raymond (P. E.), 7.
  bispiralis Hall (sp.), Clarke and Ruedemann, 1.
  medialis U. and S., Weller, 6.
  oweni U. and S., Weller, 6.
  rectangularis n. sp., Raymond (P. E.), 7.
Loricera exita n. sp., Scudder, 1.
Loripes Cuvier, Dall, 8.
Loxonema attenuata Hall, Weller, 6.
  danai n. sp., Clarke, 19.
  delphicola Hall, mut. moloch Clarke, Loomis, 4.
  difficile n. sp., Sardeson, 11.
  hamiltoniæ Hall, Kindle, 1.
  hydraulica Hall, Kindle, 1.

Paleontology—Continued.
Genera and species described—Continued.
Loxonema jerseyensis n. sp., Weller, 6.
  læviusculum Hall, Kindle, 1.
  multiplicatum n. sp., Clarke, 19.
  noe Clarke, Clarke, 19.
  parvum Cox?, Girty, 3.
  ? peoriense Worthen, Girty, 3.
  plicatum Whitfield, Girty, 3.
  rectistriatum Hall, Kindle, 1.
  robusta Hall, Parks, 5.
  ? teres Hall, Kindle, 1.
  ? sp., Girty, 3.
  sp. undet., Weller, 6.
  sp., Kindle, 1.
  sp. undet., Weller, 2.
  sp. indet., Whiteaves, 17.
Loxopteria Frech, Clarke, 19.
  (Sluzka) corrugata n. sp., Clarke, 19.
  dispar Sandberger, Clarke, 19.
  (Sluzka) intumescentis n. sp., Clarke, 19.
  lævis Frech, Clarke, 19.
  vasta n. sp., Clarke, 19.
Loxoptychodon Sandberger, Dall, 8.
Lucapina Gray, Arnold, 2.
  crenulata Sowerby, Arnold, 2.
Lucina Bruguière, Arnold, 2.
  (Bruguière) Lamarck, Dall, 8.
  acutilineata Conrad, Arnold, 2.
  aquiana Clark, Clark and Martin, 2.
  astartiformis Aldrich, Clark and Martin, 2.
  atoma n. sp., Casey, 1.
  californica Conrad, Arnold, 2.
  chrysostoma (Meuschen) Philippi, Dall, 8.
  corpulenta n. sp., Dall, 8.
  dartoni Clark, Clark and Martin, 2.
  ? emarginata n. sp., Cragin, 2.
  janus n. sp., Dall, 8.
  megameris, Dall, 3.
  nuttalli Conrad, Arnold, 2.
  perminuta n. sp., Casey, 1.
  planiuscula n. sp., Cragin, 2.
  potosina Castillo and Aguilera, Cragin, 2.
  potosina var. metrica n. var., Cragin, 2.
  santarosana n. sp., Dall, 8.
  scopularis n. sp., Casey, 4.
  subvexa Conrad, Dall, 8.
  tenuisculpta Carpenter, Arnold, 2
  uhleri Clark, Clark and Martin, 2.
  vicksburgensis n. sp., Casey, 4.
  whitei Clark, Clark and Martin, 2.
  sp. indet., Dall, 8.
  sp., Clark and Martin, 2.
Lucinella Monterosato, Dall, 8.
Lucinisca Dall, Dall, 8.
Lucinoma Dall, Dall, 8.
Ludovicia Cossmann, Dall, 8.
Lunatia Gray, Arnold, 2.

Paleontology—Continued.

Genera and species described—Continued.

- Lunatia marylandica Conrad, Clark and Martin, 2.
- Lunulicardium Münster, Clarke, 19.
  - (Prochasma) absegmen n. sp., Clarke, 19.
  - (Pinnopsis) accola n. sp., Clarke, 19.
  - (Pinnopsis) acutirostrum Hall, Clarke, 19.
  - beushauseni n. sp., Clarke, 19.
  - (Prochasma) bickense Holzapfel, Clarke, 19.
  - clymeniæ, Clarke, 17.
  - (Chænocardiola) clymeniæ n. sp., Clarke, 19.
  - encrinitum n. sp., Clarke, 19.
  - (Prochasma) enode n. sp., Clarke, 19.
  - (Chænocardiola) eriense n. sp., Clarke, 19.
  - finitimum n. sp., Clarke, 19.
  - fragile Hall, Wood (Elvira), 1.
  - (Chænocardiola) furcatum n. sp., Clarke, 19.
  - hemicardioides, Clarke, 17.
  - (Chænocardiola) hemicardioides n. sp., Clarke, 19.
  - (Pinnopsis) libum n. sp., Clarke, 19.
  - mülleri, Clarke, 17.
  - (Pinnopsis) ornatum Hall, Clarke, 19.
  - (Prochasma) parunculus n. sp., Clarke, 19.
  - pilosum n. sp., Clarke, 19.
  - sodale n. sp., Clarke, 19.
  - suppar n. sp., Clarke, 19.
  - ? (Opisthocœlus?) transversale n. sp., Clarke, 19.
  - velatum n. sp., Clarke, 19.
  - (Pinnopsis) wiscoyense n. sp., Clarke, 19.
  - n. sp., Clarke, 19.
  - n. sp.?, Clarke, 19.
- Lunulites reversa n. sp., Ulrich, 2.
- Lutra pristina n. sp., Matthew, Matthew and Gidley, 1.
- Luzonia Dall and Smith, Dall, 8.
- Lycopodites comosus Dn., White (D.), 18.
  - ? montanensis n. sp., Fontaine, 4.
- Lyginopteris oldhamia, White (D.), 19.
- Lygodium kaulfusii Heer, Knowlton, 14.
- Lyonsia Turton, Arnold, 2.
- Lyonsia Turton, Dall, 8.
  - section Allogramma Dall, Dall, 8.
  - section Philippina Dall, Dall, 8.
  - acuta n. sp., Dall, 8.
  - arenosa Mörch, Sears, 1.
  - californica Conrad, Arnold, 2.
- Lyria nestor n. sub-sp., Casey, 4.
- Lyriocrinus? beecheri n. sp., Hudson, 1.
  - dactylus Hall, Grabau, 1.

Paleontology—Continued.

Genera and species described—Continued.

- Lyriopecten Hall, Grabau, 1.
  - orbiculoides nom. nov., Grabau, 1.
- Lyrosurcula n. gen., Casey, 5.
  - acuta n. sp., Casey, 5.
  - elegans n. sp., Casey, 5.
  - obsoleta n. sp., Casey, 5.
- Lysis suciensis Whiteaves, Whiteaves, 12.
- Lysorophus tricarinatus Cope, Broili, 2.
  - tricarinatus, Case, 2.
- Lytoceras (Gabbioceras) angulatum n. sp., Anderson, 3.
  - argonautarum n. sp., Anderson, 3.
  - batesi (Trask) Gabb, Anderson, 3.
  - (Tetragonites) cala (?) (Forbes) Stoliczka, Anderson, 3.
  - (Gaudryceras) denmanense, Whiteaves, 2.
  - rel. duvalianum d'Orb., Anderson, 3.
  - (Tetragonites) jacksonense n. sp., Anderson, 3.
  - (Gaudryceras) kayei Forbes, Anderson, 3.
  - (Gaudryceras) sacya Forbes, Anderson, 3.
- Lytoceratoidea, Hyatt and Smith, 1.
- Lytoloma Cope, Wieland, 7.
  - angusta Cope, Wieland, 7.
  - (Euclastes) platyops Cope, Wieland, 7.
- Machærodus? ischyrus n. sp., Merriam, 16.
- Maclurea magna Le Sueur, Raymond (P. E.), 1.
- Macoma Leach, Arnold, 2.
  - baltica Linn., Sears, 1.
  - calcarea Gmelin, Arnold, 2.
  - indentata Carpenter, Arnold, 2.
  - inquinata Deshayes, Arnold, 2.
  - lenis (Conrad), Glenn, 6.
  - marylandica n. sp., Glenn, 6.
  - nasuta Conrad, Arnold, 2.
  - nasuta Conrad var. kelseyi Dall, Arnold, 2.
  - secta Conrad, Arnold, 2.
  - yoldiformis Carpenter, Arnold, 2.
- Macridiscus Dall, Dall, 8.
- Macrocallista Meek, Dall, 8.
  - section Chionella Cossmann, Dall, 8.
  - section Macrocallista s. s., Dall, 8.
  - acuminata n. sp., Dall, 8.
  - albaria Say, Dall, 8.
  - (Chionella?) gilberti n. sp., Dall, 10.
  - (Chionella) maculata Linné, Dall, 8.
  - marylandica (Conrad), Glenn, 6.
  - (Chionella) marylandica Conrad, Dall, 8.
  - nimbosa Solander, Dall, 8.
  - pittsburgensis Dall, Dall, 8.
  - reposta Conrad, Dall, 8.
  - (Chionella) sp., Dall, 10.

Paleontology—Continued.

Genera and species described—Continued.

- Macrocephalites ishmæ Keyserling sp., Madsen, 1.
  - sp. cf. macrocephalus Schlotheim sp., Madsen, 1.
  - pompeckji n. sp., Madsen, 1.
- Macrocheilina carinatus Nettleroth, Kindle, 1.
- Macrochilina hamiltoniæ Hall, mut. pygmæa Clarke, Loomis, 4.
  - hebe Hall., mut. pygmæa nov., Loomis, 4.
  - hebe Hall, Kindle, 1.
  - onondagænsis n. sp., Clarke, 2.
  - onondagaensis Clarke, Wilson (J. D.), 1.
  - pygmæa n. sp., Clarke, 19.
  - seneca n. sp., Clarke, 19.
  - sp. indet., Clarke and Ruedemann, 1.
  - sp., Kindle, 1.
- Macrodon cf. cochlearis Winchell, Sardeson, 11.
- Macrodon obsoletus Meek, Beede, 1.
  - parvus W. & W., Weller, 2.
  - sangamonensis Worthen?, Beede, 1.
- Macron H. and A. Adams, Arnold, 2.
  - kellettii A. Adams, Arnold, 2.
  - lividus A. Adams, Arnold, 2.
- Macronotella fragaria n. sp., Ruedemann, 2.
  - ulrichi n. sp., Ruedemann, 2.
- Macrotæniopteris californica Fontaine, Fontaine 1.
- Mactra Linné, Arnold, 2.
  - californica Conrad, Arnold, 2.
  - (Spisula) catilliformis Conrad, Arnold, 2.
  - clathrodon Lea, Glenn, 6.
  - exoleta Gray, Arnold, 2.
  - (Spisula) falcata Gould, Arnold, 2.
  - gabbiana n. sp., Anderson, 3.
  - hemphilli Dall, Arnold, 2.
  - luteola Loven (?), Sears, 1.
- Magnolia alternans Heer, Hollick, 4.
  - capellinii Heer, Berry, 7.
  - capellini Heer, Hollick, 11.
  - obtusata Heer, Berry, 5.
  - palæopetala n. sp., Hollick, 6.
  - speciosa Heer, Berry, 6, 7.
  - tenuifolia Lesq., Berry, 7.
  - tenuifolia Lesq. (?), Hollick, 11.
  - tenuifolia Lesq., Berry, 5.
  - woodbridgensis Hollick, Berry, 5.
- Majanthemophyllum grandifolium n. sp., Penhallow, 4.
- Malocystites emmonsi n. sp., Hudson, 1.
- Mancalla californiensis n. sp., Lucas, 5.
- Mangilia Risso, s. s., Arnold, 2.
- Mangilia (Leach) Risso, Arnold, 2.
  - angulata Carpenter, Arnold, 2.
  - (Pleurotomella) bellistriata, Clark and Martin, 2.
  - (Cythara) branneri n. sp., Arnold, 2.

Paleontology—Continued.

Genera and species described—Continued.

- Mangilia (Clathurella) conradiana Gabb, Arnold, 2.
  - cornelliana n. sp., Martin, 5.
  - hooveri n. sp., Arnold, 2.
  - interfossa var. pedroana n. var., Arnold, 2.
  - interlirata Stearns, Arnold, 2.
  - (Glyphostoma) obtusa n. sp., Martin, 5.
  - oldroydi n. sp., Arnold, 2.
  - painei n. sp., Arnold, 2.
  - parva (Conrad), Martin, 5.
  - parvoidea n. sp., Martin, 5.
  - patuxentia n. sp., Martin, 5.
  - sculpturata Dall, Arnold, 2.
  - striosa C. B. Adams, Arnold, 2.
  - (Taranis) strongi n. sp., Arnold, 2.
- Mantelliceras n. gen., Hyatt, 1.
- Mantellum Adams, Arnold, 2.
- Maragnicrinus n. gen., Whitfield, 11.
  - portlandicus n. sp., Whitfield, 11.
- Marchantites erectus (Bean) Seward?, Fontaine, 1.
- Marcia H. and A. Adams, Dall, 8.
  - section Hemitapes Römer, Dall, 8.
  - section Mercimonia Dall, Dall, 8.
  - section Samarangia Dall, Dall, 8.
  - section Textivenus Cossmann, Dall, 8.
  - section Venerella Cossman, Dall, 8.
- Margarita Leach, Arnold, 2.
  - optabilis Carpenter, var. knechti n. var., Arnold, 2.
  - optabilis Carpenter var., nodosa n. var., Arnold, 2.
  - parcipicta Carpenter, var. pedroana n. var., Arnold, 2.
  - pupilla Gould, Arnold, 2.
- Margaritana nebrascensis Meek, White (C. A.), 1.
- Margaritaria abrupta (Conrad) Glenn, 6.
  - abrupta Conrad, Dall, 8.
- Margarites peninsularis n. sp., Dall, 10.
- Marginella Lamarck, Arnold, 2.
  - calvertensis n. sp., Martin, 5.
  - denticulata Conrad, Martin, 5.
  - jewettii Carpenter, Arnold, 2.
  - minuta Pfeiffer, Martin, 5.
  - (Volvarina) varia Sowerby, Arnold, 2.
- Marginifera haydenensis n. sp., Girty, 3.
  - ingrata n. sp., Girty, 3.
  - lasallensis Worthen?, Girty, 3.
  - muricata Norwood and Pratten, Girty, 3.
  - wabashensis Norwood and Pratten var., Girty, 3.
- Marginulina costata (Batsch.), Bagg, 1.
- Mariacrinus Hall, Talbot, 2.
  - beecheri n. sp., Talbot, 2.
- Mariopteris cordato-ovato obtusiloba n. var., White (D.), 10.
- Marsilea andersoni n. sp., Hollick, 11.

Paleontology—Continued.

Genera and species described—Continued.

- Martesia maloniana n. sp., Cragin, 2.
  - ovalis (Say), Glenn, 6.
  - ? parvula n. sp., Whiteaves, 12.
- Martinia subumbona (Hall), Kindle, 1.
  - williamsi n. sp., Kindle, 1.
- Mastodon, Douglass, 8.
  - americanus, Holland, 3.
- Matheria brevis n. sp., Whiteaves, 8.
- Matonidium althausii (Dunker) Ward, Fontaine, 3.
- Meandriana Lamarck, Vaughan, 2.
  - mæandrites (Linnæus), Vaughan, 2.
- Medlicottia, Waagen, Smith (J. P.), 3.
  - copei White, Smith (J. P.), 3.
- Medullosa stellata var. gigantea, White (D.), 19.
  - stellata var. typica, White (D.), 19.
- Meekella striaticostata Cox, Girty, 3.
  - striatocostata (Cox), Beede, 1.
- Meekoceras Hyatt, Hyatt and Smith, 1.
- Meekoceras Hyatt, Smith (J. P.), 5.
  - (Gyronites) aplanatum White, Hyatt and Smith, 1.
  - (Gyronites) aplanatum White, Smith (J. P.), 5.
  - gracilitatis White, Smith (J. P.), 5.
  - gracilitatis White, Hyatt and Smith, 1.
  - (Prionolobus) jacksoni n. sp., Hyatt and Smith, 1.
  - (Koninckites) mushbachanum White, Smith (J. P.), 5.
  - (Koninckites) mushbachanum White, Hyatt and Smith, 1.
  - pilatum n. sp., Hyatt and Smith, 1.
  - (Prionolobus) waageni n. sp., Hyatt and Smith, 1.
- Meekoceratidæ, Hyatt and Smith, 1.
- Meekopora Ulrich, Condra, 2.
  - prosseri Ulrich n. sp., Condra 1, 2.
- Megablattina n. gen., Sellards, 5.
  - beecheri n. sp., Sellards, 5.
- Megacerops, Lull, 6.
  - amplus Marsh, Lull, 5.
  - angustigenis Cope, Osborn, 10.
  - avus Marsh, Osborn, 10.
  - bicornutus Osborne, Lull, 5.
  - bicornutus n. sp., Osborn, 10.
  - brachycephalus n. sp., Osborn, 10.
  - coloradensis Leidy, Osborn, 10.
  - dispar Marsh, Osborn, 10.
  - marshi n. sp., Osborn, 10.
  - robustus Marsh, Osborn, 10.
  - ? selwynianus Cope, Osborn, 10.
  - tichoceras Scott and Osborn, Osborn, 10.
  - tyleri n. sp., Lull, 5.
- Megalneusaurus Knight, Williston, 14.
- Megalocnus Leidy, Vaughan, 9.
- Megalomphala robusta n. sp., Whiteaves, 17.

Paleontology—Continued.

Genera and species described—Continued.

- Megalonyx jeffersonii Leidy?, Sinclair, 7.
  - sierrensis n. sp., Sinclair, 7.
  - wheatleyi Cope?, Sinclair, 7.
  - ? sp., Sinclair, 7.
- Megambonia aviculoidea Hall, Weller, 6.
  - bellistriata Hall, Weller, 6.
  - parva n. sp., Weller, 6.
  - ? sp. undet., Weller, 6.
- Megapezia n. gen., Matthew (G. F.), 21, 30.
  - pineoi n. sp., Matthew (G. F.), 21, 30.
- Megistocrinus abnormis (Lyon), Wood (Elvira), 3.
  - circulus? Rowley, Greene, 13.
  - circulus n. sp. (Rowley), Greene, 2.
  - corniger n. sp. (Rowley), Greene, 2.
  - corniger, Rowley, Greene, 9.
  - depressus (Hall), Wood (Elvira), 3.
  - expansus Miller and Gurley, Wood (Elvira), 3.
  - expansus M. & G., Rowley, Greene, 11.
  - expansus, Miller and Gurley, Rowley, Greene, 2.
  - expansus var. inflatus, n. var., (Rowley), Greene, 2.
  - expansus var. magniventrus, n. var., Rowley, Greene, 6.
  - expansus var. magniventrus?, Rowley, Greene, 9.
  - hemisphericus? M. & G., Rowley, Greene, 9.
  - nodosus Barris?, Wood (Elvira), 3.
  - oppelti n. sp., Rowley, Greene, 8.
  - regularis n. sp., Wood (Elvira), 3.
  - rugosus Lyon and Casseday, Wood (Elvira), 3.
  - rugosus L. & C., Rowley, Greene, 8.
  - rugosus var. spinuliferus, n. var., Rowley, Greene, 6.
  - spinosulus Lyon, Rowley, Greene, 13.
  - sphæralis n. sp., Wood (Elvira), 3.
  - tuberatus n. sp., Wood (Elvira), 3.
  - unicornis n. sp. (Rowley), Greene, 2.
- Melampus Montfort, Arnold, 2.
  - olivaceus Carpenter, Arnold, 2.
- Melania exigua Conrad, Stearns (R. E. C.), 2.
  - ? whiteavesi n. sp., Stanton, Stanton and Hatcher, 1.
- Melina maxillata (Deshayes) Glenn, 6.
- Melocrinus clarkei (Hall) Williams, Clarke, 19.
  - nobilissimus (Hall), Talbot, 2.

Paleontology—Continued.

Genera and species described—Continued.

- Melocrinus pachydactylus (Conrad), Talbot, 2.
  - wittenbergensis n. sp., Rowley, 3.
- Melongena (?) potomacensis n. sp., Clark and Martin, 2.
- Melonites Owen and Norwood, Klem, 1.
  - crassus Hambach, Klem, 1.
  - irregularis Hambach, Klem, 1.
  - multiporus Norwood and Owen, Klem, 1.
  - multiporus? O. & N., Ulrich, 8.
  - septenarius Jackson, Klem, 1.
- Membranipora angusta n. sp., Ulrich, 2.
  - bifoliata n. sp., Ulrich and Bassler, 4.
  - caminosa n. sp., Ulrich and Bassler, 4.
  - fistula n. sp., Ulrich and Bassler, 4.
  - fossulifera n. sp., Ulrich and Bassler, 4.
  - germana n. sp., Ulrich and Bassler, 4.
  - nitidula n. sp., Ulrich and Bassler, 4.
  - oblongula n. sp., Ulrich and Bassler, 4.
  - parva n. sp., Ulrich and Bassler, 4.
  - rimulata n. sp., Ulrich, 2.
  - spiculosa n. sp., Ulrich, 2.
- Meniscomys sp. indet., Matthew, Matthew and Gidley, 1.
- Menispermites californicus n. sp., Fontaine, 3.
  - tenuinervis Fontaine, Fontaine, 5.
- Menophyllum ulrichanum n. sp., Girty, 3.
- Mercimonia Dall, Dall, 8.
- Meretrix Lamarck, Dall, 8.
  - arata Gabb, Whiteaves, 12.
  - lenis (Conrad), Clark and Martin, 2.
  - ovata var. ovata (Rogers), Clark and Martin, 2.
  - ovata var. pyga Conrad, Clark and Martin, 2.
  - subimpressa Conrad, Clark and Martin, 2.
- Meristella barrisi Hall, Kindle, 1.
  - nasuta (Conrad), Kindle, 1.
  - lævis (Van.), Weller, 6.
  - princeps Hall, Weller, 6.
  - lata (Hall), Weller, 6.
- Meristina? expansa n. sp., Whiteaves, 17.
  - maria Hall, Kindle and Breger, 1.
  - maria Hall 1863, Beecher, 1.
  - cf. princeps Hall, Kindle and Breger, 1.
  - rectirostris Hall, Kindle and Breger, 1.
  - rectirostris Hall 1882, Beecher, 1.
- Merriamia, Merriam (J. C.), 13.
  - zitteli, Merriam (J. C.), 13.
- Merychippus Leidy, Gidley, 5.
- Merychyus Leidy, Matthew (W. D.), 2.

Paleontology—Continued.

Genera and species described—Continued.

- Merychyus elegans Leidy, Matthew (W. D.), 2.
- Merycochœrus Leidy, Matthew (W. D.), 2.
  - altiramus n. sp., Douglas, 2.
  - compressidens n. sp., Douglas, 2.
  - elrodi n. sp., Douglas, 2.
  - madisonius n. sp., Douglas, 2.
  - ? obliquidens?, Douglas, 2.
  - proprius Leidy, Matthew (W. D.), 2.
  - rusticus Leidy, Matthew (W. D.), 2.
- Merycodus?, Douglass, 8.
- Merycodus Leidy, Matthew (W. D.), 14.
  - agilis Douglass, Matthew (W. D.), 14.
  - furcatus (Leidy), Matthew (W. D.), 14.
  - ? necatus? Leidy, Douglass, 8.
  - necatus Leidy, Matthew (W. D.), 14.
  - osborni n. sp., Matthew (W. D.), 14.
  - ? ramosus Cope, Matthew (W. D.), 14.
- Mesalia obruta (Conrad), Clark and Martin, 2.
- Mesoblastus Etheridge fil. and Carpenter, Hambach, 1.
  - glaber? Meek and Worthen, Ulrich, 8.
  - kirkwoodensis? Shumard, Rowley, 4.
- Mesocyon? drummondanus n. sp., Douglass, 8.
- Mesodesma alaskensis n. sp., Dall, 10.
  - mariana n. sp., Glenn, 6.
- Mesodon abrasus Cragin, Williston, 1.
- Mesohippus acutidens n. sp., Sinclair, 6.
  - assiniboiensis n. sp., Lambe, 16.
  - bairdi Leidy, Osborn, 21.
  - brachystylus n. sp., Osborn, 31.
  - brachystylus Osborn, Lambe, 16.
  - celer Marsh, Osborn, 31.
  - copei Osborn and Wortman, Osborn, 31.
  - eulophus n. sp., Osborn, 31.
  - hypostylus n. sp., Osborn, 31.
  - intermedius Osborn and Wortman, Osborn, 31.
  - latidens Douglass, Osborn, 31.
  - latidens n. sp., Douglass, 8.
  - meteulophus n. sp., Osborn, 31.
  - montanensis n. sp., Osborn, 31.
  - obliquidens n. sp., Osborn, 31.
  - planidens n. sp., Lambe, 16.
  - præcocidens n. sp., Lambe, 16.
  - propinquus n. sp., Lambe, 16.
  - proteulophus n. sp., Osborn, 31.
  - stenolophus n. sp., Lambe, 16.
  - validus n. sp., Osborn, 31.
  - westoni Cope, Osborn, 31.

Paleontology—Continued.

Genera and species described—Continued.

- Meschippus westoni, Cope, Matthew (W. D.), 9.
  - westoni (Cope), Lambe, 14.
  - westoni Cope, Lambe, 16.
- Mesonychidæ, Matthew (W. D.), 19.
- Mesonyx obtusidens Cope, Wortman, 9.
- Mesostoma? intermedium n. sp., Whiteaves, 12.
  - ? newcombii n. sp., Whiteaves, 12.
  - suciense n. sp., Whiteaves, 12.
- Mesotrypa angularis n. sp., Ulrich and Bassler, 2.
  - echinata n. sp., Ulrich and Bassler, 2.
- Metablastus bipyramidalis Hall, Rowley, 4.
  - bipyramidalis ? Hall, Rowley, Greene, 5.
  - bipyramidalis Hall, Rowley, Greene, 11.
  - lineatus Shumard, Rowley, 4.
  - nitidulus M. and G., Rowley, Greene, 1.
- Metacheiromys marshi n. gen. and sp., Wortman, 13.
- Metamynodon?, Douglass, 8.
- Metaplasia plicata n. sp., Weller, 6.
  - pyxidata (Hall), Weller, 6.
- Metasigaloceras n. gen., Hyatt, 1.
- Metacheiromys Wortman, Osborn, 30.
  - dasypus n. sp., Osborn, 30.
  - tatusia n. sp., Osborn, 30.
- Metatirolites Mojsisovics, Hyatt and Smith, 1.
- Metatissotia n. gen., Hyatt, 1.
- Metengonoceras n. gen., Hyatt, 1.
  - acutum n. sp., Hyatt, 1.
  - ambiguum n. sp., Hyatt, 1.
  - dumbli (Cragin), Hyatt, 1.
  - inscriptum n. sp., Hyatt, 1.
  - inscriptum var.?, Hyatt, 1.
- Metis H. and A., Adams, Arnold, 2.
  - alta Conrad, Arnold, 2.
  - biplicata Conrad, Glenn, 6.
- Metoicoceras n. gen., Hyatt, 1.
  - acceleratum n. sp., Hyatt, 1.
  - gibbosum n. sp., Hyatt, 1.
  - swallovi (Shumard), Hyatt, 1.
  - whitei n. sp., Hyatt, 1.
- Metopocetus Cope, Case, 9.
  - durinasus Cope, Case, 9.
- Metopoma explanata n. sp., Sardeson, 9.
- Metoposaurus fraasi n. sp., Lucas (F. A.), 19.
  - fraasi Lucas, Branson, 2.
- Metoptoma amii n. sp., Matthew (G. F.), 19.
- Metula fastidiosa n. sp., Casey, 4.
  - fragilis n. sp., Casey, 4.
  - marylandica n. sp., Clark and Martin, 2.
- Myeria? harveyi Woodward, Whiteaves, 12.

Paleontology—Continued.

Genera and species described—Continued.

- Michelinia convexa D'Orbigny, Beecher, 1.
  - eugeneæ White, Beede, 1.
  - eugeneæ var. princetonensis, Ulrich, 8.
  - subramosa n. sp., Ulrich, 8.
  - wardi n. sp., Greene, 8.
- Microdiscus? sp. undet. Weller, 6.
- Microdon leptogaster (Win.), Weller, 2.
- Microdrillia n. gen., Casey, 4.
  - aldrichiella n. sp., Casey, 4.
  - biplicatula n. sp., Casey, 4.
  - (Pleurotoma) cossmani,' Meyer, Casey, 4.
  - elongatula n. sp., Casey, 4.
  - (Glyphostoma) harrisi Ald., Casey, 4.
  - (Pleurotoma) infans Meyer, Casey, 4.
  - (Pleurotoma) lerchi Vgn., Casey, 4.
  - minutissima n. sp., Casey, 4.
  - robustula n. sp., Casey, 4.
  - rostratula n. sp., Casey, 4.
  - solidula n. sp., Casey, 4.
  - vicksburgella n. sp., Casey, 4.
- Microcyclus Meek and Worthen, Lambe, 2.
  - discus Meek and Worthen, Lambe, 2.
- Micromeris Conrad, Dall, 8.
- Microporella ? bifoliata n. sp., Ulrich and Bassler, 4.
  - inflata n. sp., Ulrich and Bassler, 4.
  - præciliata n. sp., Ulrich and Bassler, 4.
- Micropternodus borealis n. gen. and sp., Matthew (W. D.), 9.
- Microstagon Cossmann, Dall, 8.
- Microsurcula n. gen., Casey, 5.
  - bellula n. sp., Casey, 5.
  - nucleola n. sp., Casey, 5.
- Microsyops Leidy, Wortman, 13.
  - annectens Marsh, Wortman, 13.
  - (Bathrodon) annectens Marsh, Osborn, 11.
  - elegans Marsh, Wortman, 13.
  - gracilis, Osborn, 11.
  - gracilis Leidy, Wortman, 13.
  - schlosseri n. sp., Wortman, 13.
  - scottianus Cope, Osborn, 11.
  - (Mesacodon) speciosus Marsh, Osborn, 11.
  - (Bathrodon) typus Marsh, Osborn, 11.
  - uintensis Osborn, Osborn, 11.
- Microzamia ? dubia n. sp., Berry, 6.
- Milleroceras parrishi Miller and Gurley, Smith (J. P.), 3.
- Milneria Dall, Dall, 8.
- Miltha H. and A. Adams, Dall, 8.
- Mimulus waldronensis Miller and Dyer 1878, Beecher, 1.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - **Mioclœnus acolytus (Cope), Douglass, 3.**
  - **Miodontiscus Dall, Dall, 8.**
  - **Miodontopsis Dall, Dall, 8.**
  - **Miliolina Williamson, Bagg, 6.**
    - **maclienta, Guppy, 4.**
    - **seminulum (Linné), Bagg, 6.**
  - **Milleaster n. gen., Ulrich, 6.**
    - **incrustans n. sp., Ulrich, 6.**
    - **? subramosus n. sp., Ulrich, 6.**
  - **Miohippus crassicuspis n. sp., Osborn, 31.**
    - **gidleyi n. sp., Osborn, 31.**
  - **Miolabis, Matthew (W. D.), 15.**
    - **(Paratylopus) cameloides, Matthew (W. D.), 15.**
    - **(Paratylopus) primævus n. subg. and sp., Matthew (W. D.), 15.**
    - **(Paratylopus) sternbergi, Matthew (W. D.), 15.**
    - **transmontanus, Matthew (W. D.), 15.**
  - **Mitra Lamarck, Arnold, 2.**
    - **mariana n. sp., Martin, 5.**
    - **marylandica Clark, Clark and Martin, 2.**
    - **maura Swainson, Arnold, 2.**
    - **pomonkensis n. sp., Clark and Martin, 2.**
    - **potomacensis n. sp., Clark and Martin, 2.**
  - **Mitromorpha A. Adams, Arnold, 2.**
    - **filosa Carpenter, Arnold, 2.**
    - **intermedia n. sp., Arnold, 2.**
  - **Mixodectes Cope, Wortman, 13.**
    - **crassiusculus Cope, Osborn, 11.**
    - **pungens Cope, Osborn, 11.**
  - **Mixosaurus, Merriam (J. C.), 6, 13.**
    - **cornalianus, Merriam (J. C.), 13.**
  - **Modiella sp.?, Clarke, 19.**
  - **Modiola geniculata n. sp., Cragin, 2.**
    - **hollicki n. sp., Brown (T. C.), 1.**
    - **maloniana n. sp., Cragin, 2.**
    - **merriami n. sp., Weaver, 1.**
    - **cfr. simplex (J. Sowerby), Ravn, 1.**
    - **siskiyouensis Gabb, Whiteaves, 12.**
    - **subelliptica Meek, Beede, 1.**
    - **? subelliptica Meek, Girty, 3.**
    - **vineyardensis n. sp., Brown T. C.), 1.**
    - **vineyardensis mut. inornata, Brown (T. C.), 1.**
    - **(Brachydontes) sp. ind., Whiteaves, 12.**
    - **? sp., Shattuck, 8.**
  - **Modiolaria curta n. sp., Glenn, 6.**
    - **discors Loven, Sears, 1.**
    - **lævigata Gray, Sears, 1.**
  - **Modiolopsis Hall, Grabau, 1.**
    - **affinis n. sp., Sardeson, 1.**
    - **aviculoides Hall, Ruedemann, 2.**
    - **contigua n. sp., Sardeson, 1.**
    - **depressa n. sp., Weller, 6.**
    - **faba (Con.), Weller, 6.**

Paleontology—Continued.
- *Genera and species described*—Continued.
  - **Modiolopsis fabaformis n. sp., Raymond (P. E.), 7.**
    - **fountainensis n. sp., Sardeson, 1.**
    - **gregalis n. sp., Sardeson, 1.**
    - **jerseyensis n. sp., Weller, 6.**
    - **litoralis n. sp., Sardeson, 1.**
    - **orthonata (Conrad), Grabau, 1.**
    - **plana Hall, Sardeson, 10.**
    - **postica n. sp., Sardeson, 1.**
    - **primigenia (Conrad), Grabau, 1.**
    - **senecta n. sp., Sardeson, 1.**
    - **? cf. solvensis Hicks, Matthew (G. F.), 12, 20.**
    - **sowteri n. sp., Raymond (P. E.), 7.**
    - **cf. subalatus, Grabau, 1.**
    - **subquadrilateralis n. sp., Hudson, 1.**
    - **thecoides n. sp., Matthew (G. F.), 1.**
  - **Modiolus Lamarck, Arnold, 2.**
    - **alabamensis Aldrich, Clark and Martin, 2.**
    - **alaskanus n. sp., Dall, 10.**
    - **dalli n. sp., Glenn, 6.**
    - **ducatellii Conrad, Glenn, 6.**
    - **fornicatus Carpenter, Arnold, 2.**
    - **harrimani n. sp., Dall, 10.**
    - **ionensis n. sp., Glenn, 6.**
    - **marylandicus n. sp., Clark and Martin, 2.**
    - **rectus Conrad, Arnold, 2.**
    - **virginicus (Conrad), Glenn, 6.**
    - **sp., Dall, 10.**
    - **(Botula?) sp., Dall, 10.**
  - **Modiomorpha affinis Hall, Kindle, 1.**
    - **alta Hall, Kindle, 1.**
    - **charlestownensis Nettleroth, Kindle, 1.**
    - **concentrica Hall, Kindle, 1.**
    - **myteloides Con., Kindle, 1.**
    - **recta Hall, Kindle, 1.**
  - **Mœrella Fischer, Arnold, 2.**
  - **Mojsvaroceras Hyatt, Hyatt and Smith, 1.**
    - **turneri n. sp., Hyatt and Smith, 1.**
  - **Molleria minuscula Dall, Martin, 5.**
  - **Monia Gray, Arnold, 2.**
  - **Monilipora prosseri Beede, Girty, 3.**
  - **Monilopora amplexa, Rowley, 4.**
    - **beecheri Grabau, Greene, 2.**
  - **Monobolina refulgens, Matthew (G. F.), 20.**
  - **Monocarpellites n. gen., Perkins, 13.**
    - **elegans n. sp., Perkins, 13.**
    - **gibbosus n. sp., Perkins, 13, 17.**
    - **hitchcockii n. sp., Perkins, 13.**
    - **irregularis n. sp., Perkins, 13.**
    - **medius, n. sp., Perkins, 13.**
    - **orbicularis n. sp., Perkins, 13.**
    - **ovalis n. sp., Perkins, 13.**
    - **pyramidalis n. sp., Perkins, 13.**
    - **sulcatus n. sp., Perkins, 13, 17.**
    - **vermontanus n. sp., Perkins, 13.**
    - **whitfieldii n. sp., Perkins, 13.**

Paleontology—Continued.

Genera and species described—Continued.

- Monoceros Lamarck, Arnold, 2.
  - engonatum Conrad, Arnold, 2.
  - lapilloides Conrad, Arnold, 2.
- Monocladodus Claypole, Claypole, 5.
  - clarki Claypole, Claypole, 5.
  - pinnatus Claypole, Claypole, 5.
- Monoclonius Cope, Stanton and Hatcher, 1.
  - belli n. sp., Lambe, 3.
  - canadensis n. sp., Lambe, 3, 10, 11.
  - crassus Cope, Stanton and Hatcher, 1.
  - dawsoni n. sp., Lambe, 3.
  - dawsoni Lambe, Stanton and Hatcher, 1.
  - sphenocerus Cope, Stanton and Hatcher, 1.
- Monocraterion, Matthew (G. F.), 12.
- Monomorella noveboracum n. sp., Clarke and Ruedemann, 1.
  - sp., Kindle and Breger, 1.
- Monophyllites Mojsisovics, Hyatt and Smith, 1.
  - billingsianus Gabb, Hyatt and Smith, 1.
- Monopteria alata Beede, Girty, 3.
  - longispina Cox, Girty, 3.
  - polita White, Girty, 3.
- Monotrypa corrugata n. sp., Weller, 6.
  - globosa n. sp., Weller, 6.
  - magna Ulr., Sardeson, 3.
  - sphærica (Hall), Weller, 6.
- Monotrypella Ulrich, Ulrich and Bassler, 2.
  - æqualis Ulrich, Ulrich and Bassler, 2.
  - quadrata (Rominger), Hayes and Ulrich, 1.
- Montacuta mariana Dall, Glenn, 6.
- Monticulipora D'Orbigny, Ulrich and Bassler, 2.
  - cleavelandi James, Ulrich and Bassler, 2.
  - epidermata n. sp., Ulrich and Bassler, 2.
  - mammulata d'Orbigny, Nickles, 6.
  - molesta Nicholson, Hayes and Ulrich, 1.
- Mopalia Gray, Arnold, 2.
  - ciliata Sowerby, Arnold, 2.
- Moriconia cycloxon Deb. & Et., Berry, 8.
- Morio brevedentata (Aldrich), Clark and Martin, 2.
- Morosaurus, Osborn, 51.
- Morosaurus, Osborn and Granger, 1.
  - grandis, Riggs, 2.
  - sp., Osborn, 32.
- Mortoniceras crenulatum n. sp., Anderson, 3.
- Muensteroceras Hyatt, Smith (J. P.), 3.
  - ? holmesi Swallow, Smith (J. P.), 3.
  - ? indianense Miller, Smith (J. P.), 3.

Paleontology—Continued.

Genera and species described—Continued.

- Muensteroceras ? morganense Swallow, Smith (J. P.), 3.
  - osagense Swallow, Smith (J. P.), 3.
  - oweni Hall, Smith (J. P.), 3.
  - parallelum Hall, Smith (J. P.), 3.
- Mucronella aspera n. sp., Ulrich, 2.
- Murchisonia argylensis n. sp., Sardeson, 2.
  - (Cœlacaulis) bivittata Hall, Kindle and Breger, 1.
  - desiderata Hall, Kindle, 1.
  - desiderata Hall, Parks, 5.
  - cfr. gracilis Hall, Sardeson, 1.
  - (Turritoma) laphami Hall, Kindle and Breger, 1.
  - putilla n. sp., Sardeson, 2.
  - sp. undet., Kindle and Breger, 1.
  - sp. indet., Sardeson, 11.
- Murex Linné, Arnold, 2.
  - (Pterorhytis) conradi Dall, Martin, 5.
  - (Pteronotus) festivus Hinds, Arnold, 2.
  - (Pterorhytis) foliatus Martyn, Arnold, 2.
  - (Chicoreus) leeanus Dall, Arnold, 2.
  - (Pterorhytis) monoceros Sowerby, Arnold, 2.
  - (Pterorhytis) nuttalli Conrad, Arnold, 2.
  - (Chicorus?) trialatus Sowerby, Arnold, 2.
- Muricidea shilohensis (Hilprin), Martin, 5.
- Musculium Link, Dall, 8.
- Mustela? minor n. sp., Douglass, 8.
  - ogygia n. sp., Matthew (W. D.), 2.
- Mustelidæ, Matthew (W. D.), 19.
- Mya crassa Grewingk, Dall, 10.
  - producta Conrad, Glenn, 6.
- Myalina? abstemia n. sp., Sardeson, 11.
  - ampla Meek and Hayden, Beede, 1.
  - arkansasana Weller?, Girty, 3.
  - congeneris Walcott, Beede, 1.
  - copei n. sp., Whitfield, 2.
  - cuneiformis Gurley, Girty, 3.
  - ? exasperata Beede, Beede, 1.
  - kansasensis Shumard, Beede, 1.
  - keokuk Worthen, Girty, 3.
  - perattenuta Meek and Hayden, Beede, 1.
  - perattenuata Meek and Hayden?, Girty, 3.
  - perniformis Cox?, Girty, 3.
  - subquadrata Shumard, Beede, 1.
  - subquadrata Shumard?, Girty, 3.
  - swallovi McChesney, Beede, 1.
  - wyomingensis Lea, Girty, 3.
- Myelophycus n. gen., Ulrich, 4.
  - curvatum n. sp., Ulrich, 4.
- Mylacris anceps n. sp., Sellards, 8.
  - (Dipeltis) diplodiscus, Sellards, 5.
  - diplodiscus, Sellards, 8.
  - elongata, Sellards, 8.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Mylagaulodon angulatus n. gen. and sp., Sinclair, 3.
  - Mylagaulidæ, Matthew (W. D.), 19.
  - Mylagaulus Cope, Douglass, 8.
    - (Mesogaulus) ballensis Riggs, Matthew (W. D.), 6.
    - lævis n. sp., Matthew (W. D.), 6.
    - monodon Cope, Matthew (W. D.), 2, 6.
    - paniensis n. sp., Matthew (W. D.), 6.
    - paniensis? Matthew, Douglass, 8.
    - ? pristinus n. sp., Douglass, 8.
    - proximus n. sp., Douglass, 8.
    - sesquipedalis Cope, Matthew (W. D.), 6.
    - sp., Douglass, 8.
  - Myledaphus bipartitus Cope, Lambe, 3.
  - Myliobatis Cuvier, Eastman, 18.
  - Myliobatis Cuvier, Eastman, 1.
    - copeanus Clark, Eastman, 1.
    - frangens n. sp., Eastman, 18.
    - gigas, Eastman, 18.
    - magister Leidy, Eastman, 1.
    - pachyodon, Eastman, 18.
  - Mylohyus Cope, Matthew and Gidley, 1.
  - Mylostoma Newberry, Dean, 2.
  - Myoconcha grœnlandica n. sp., Madsen, 1.
  - Myonera Dall and Smith, Dall, 8.
  - Myriapodites sp., Matthew (G. F.), 23.
  - Myrica brittoniana nov. nom., Berry, 6.
    - brookensis Fontaine, Fontaine, 5.
    - cliffwoodensis n. sp., Berry, 7.
    - heerii n. sp., Berry, 4.
    - oregoniana n. sp., Knowlton, 14.
    - ? personata n. sp., Knowlton, 14.
  - Myriotheca, Sellards, 3.
  - Myrsine crassa Lesq., Berry, 5.
    - elongata Newb., Hollick, 4.
  - Myrsus H. and A. Adams, Dall, 8.
  - Myrtæa Turton, Dall, 8.
    - section Eulopia Dall, Dall, 8.
    - section Myrtæa s. s., Dall, 8.
    - section Myrteopsis Sacco, Dall, 8.
    - (Eulopia) furcata n. sp., Dall, 8.
    - limoniana n. sp., Dall, 8.
    - (Eulopia) vermiculata n. sp., Dall, 8.
  - Myrteopsis Sacco, Dall, 8.
  - Mysia Leach, Dall, 8.
  - Mytilarca acutirostrum Hall, Clarke and Ruedemann, 1.
    - eduliformis n. sp., Clarke and Ruedemann, 1.
    - obliqua n. sp., Weller, 6.
    - pernoides n. sp., Whiteaves, 17.
  - Mytilimeria Conrad, Arnold, 2.
    - nuttalli Conrad, Arnold, 2.
  - Mytilus (Linné) Bolten, Arnold, 2.
    - affinis J. Sowerby, Ravn, 1.
    - conradinus d'Orbigny, Glenn, 6.
    - edulis Linné, Arnold, 2.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Mytilus (Mytiloconcha) incurvus Conrad, Glenn, 6.
    - middendorffi Grewingk, Dall, 10.
    - nuntius n. sp., Cragin, 2.
    - pauperculus Gabb, Whiteaves, 12.
  - Nageiopsis angustifolia Fontaine, Fontaine, 5.
    - heterophylla Fontaine, Fontaine, 5.
    - latifolia Fontaine?, Fontaine, 3.
    - longifolia Fontaine?, Fontaine, 3.
    - longifolia Fontaine, Fontaine, 2, 4.
    - montanensis n. sp., Fontaine, 4.
    - recurvata Fontaine?, Fontaine, 5.
  - Nannites Mojsisovics, Hyatt and Smith, 1.
    - dieneri n. sp., Hyatt and Smith, 1.
  - Nannitinæ Diener, Hyatt and Smith, 1.
  - Nanno kingstonensis n. sp., Whiteaves, 19.
    - primævus n. sp., Whiteaves, 19.
  - Nanopus caudatus Marsh, Matthew (G. F.), 25.
    - obtusus n. sp., Matthew (G. F.), 30.
    - quadratus n. sp., Matthew (G. F.), 30.
  - Nassa Lamarck, Arnold, 2.
    - arnoldi n. sp., Anderson, 7.
    - beaumontensis Aldr., Aldrich, 1.
    - californiana Conrad, Arnold, 2.
    - calvertensis n. sp., Martin, 5.
    - cerritensis n. sp., Arnold, 2.
    - fossata Gould, Arnold, 2.
    - greenboroensis n. sp., Martin, 5.
    - gubernatoria n. sp., Martin, 5.
    - insculpta Carpenter, Arnold, 2.
    - marylandica n. sp., Martin, 5.
    - mendica Gould, Arnold, 2.
    - mendica Gould, var. cooperi Forbes, Arnold, 2.
    - peralta (Conrad), Martin, 5.
    - peraltoides n. sp., Martin, 5.
    - perpinguis Hinds, Arnold, 2.
    - tegula Reeve, Arnold, 2.
    - trivittata Say, Martin, 5.
    - trivittatoides (Whitfield), Martin, 5.
    - versicolor C. B. Adams, var. hooveri n. var., Arnold, 2.
  - Natica (Adanson) Scopoli, Arnold, 2.
    - bilabiata n. sp., Cragin, 2.
    - (Cryptonatica) clausa Broderip and Sowerby, Arnold, 2.
    - cliftonensis Clark, Clark and Martin, 2.
    - finlayensis n. sp., Cragin, 2.
    - inflecta n. sp., Cragin, 2.
    - williamsi n. sp., Cragin, 2.
  - Naticopsis altonensis McChesney, Girty, 3.
    - dubia n. sp., Rowley, Greene, 2.
    - levis Meek, Kindle, 1.
    - magnifica n. sp., Webster, 2.

Paleontology—Continued.

Genera and species described—Continued.

Naticopsis monilifera White, Girty, 3.
  sp., Beede, 8.
  sp., Kindle, 1.

Nautilus burkarti Castillo and Aguilera?, Cragin, 2.
  charlottensis Whiteaves, Anderson, 3.
  gabbi n. sp., Anderson, 3.
  hilli n. sp., Shattuck, 8.
  maximus (Conrad), Kindle, 1.
  naufragus n. sp., Cragin, 2.
  texanus Shumard, Shattuck, 8.
  ? sp., Martin, 5.

Neæra Gray, Arnold, 2.
  pectinata Carpenter, Arnold, 2.

Neanites n. subg., Hyatt and Smith, 1.

Nebria abstracta n. sp., Scudder, 1.

Necrolemur, Wortman, 14.

Nectosaurus halius n. gen. and sp., Merriam (J. C.), 15.

Nelumbo kempii (Hollick), Hollick, 11.
  primæva n. sp., Berry, 5.

Nematophycus Caruthers, Grabau, 1.
  crassus (Penhallow), Grabau, 1.

Nematophyton, Prosser, 8.

Neocardia Sowerby, Dall, 8.

Neocrassina Fischer, Dall, 8.

Neohipparion whitneyi n. gen. and sp., Gidley, 2.

Neolenus serratus Rominger sp., Woodward (H.), 1.

Neovulpavus washakius n. gen. et sp., Wortman, 2.

Nerinea circumvoluta n. sp., Cragin, 2.
  dispar? Gabb, var., Whiteaves, 12.
  goodellii n. sp., Cragin, 2.

Nerinella stantoni n. sp., Cragin, 2.

Nerita finlayensis n. sp., Cragin, 2.
  nodilirata n. sp., Cragin, 2.
  peroblata n. sp., Cragin, 2.

Neurankylus n. gen., Lambe, 3.
  eximius n. sp., Lambe, 3.
  eximius Lambe, Stanton and Hatcher, 1.

Neuropteris carceraria n. sp., White (D.), 10.
  hastata n. sp., White (D.), 10.
  lindahli n. sp., White (D.), 10.
  rarinervis Bunb., Sellards, 4.
  cf. smithii, White (D.), 10.

Neverita Risso, Arnold, 2.

Nicklesia n. gen., Hyatt, 1.

Nileus vigilans Meek and Worthen, Finch (G. E.), 2.

Nilsonia Brongniart, Fontaine, 1.
  californica Fontaine, Fontaine, 3.
  compta (Phillips) Göppert, Fontaine, 1.
  nigracollensis n. sp., Wieland, 11.
  nipponensis Yokoyama, Fontaine, 1.
  orientalis Heer, Fontaine, 1.
  orientalis minor n. var., Fontaine, 1.

Paleontology—Continued.

Genera and species described—Continued.

Nilsonia parvula (Heer) Fontaine n. comb., Fontaine, 1.
  polymorpha cretacea (Sch.), Penhallow, 4.
  pterophylloides Nathorst non Yokoyama, Fontaine, 1.
  ? sambucensis Ward n. sp., Fontaine, 3.
  schaumburgensis (Dunker) Nathorst, Fontaine, 4.
  stantoni Ward n. sp., Fontaine, 3.

Niso lineata Conrad, Martin, 5.
  umbilicata (Lea), Clark and Martin, 2.

Nisusia n. gen., Walcott, 12.
  alberta Walcott, Walcott, 12.
  (Jamesella) amii n. sp., Walcott, 12.
  (Jamesella) argenta n. sp., Walcott, 12.
  (Jamesella) erecta n. sp., Walcott, 12.
  festinata Billings, Walcott, 12.
  festinata transversa Walcott, Walcott, 12.
  (Jamesella) kuthani Pompeckj, Walcott, 12.
  (Jamesella) perpasta Pompeckj, Walcott, 12.
  (Jamesella) perpasta macra Pompeckj, Walcott, 12.
  (Jamesella) perpasta subquadrata Pompeckj, Walcott, 12.
  (Jamesella) utahensis n. sp., Walcott, 12.
  (Jamesella) sp. und., Walcott, 12.

Nodipecten Dall, Arnold, 2.

Nodophycus thallyformis n. gen. and sp., Herzer, 2.

Nodosaria abyssorum, Guppy, 4.
  adolphina d'Orbigny, Bagg, 9.
  affinis (d'Orbigny), Bagg, 1.
  arundinea, Guppy, 4.
  bacillum Defrance, Bagg, 1.
  communis (d'Orbigny), Bagg, 9.
  consobrine d'Orbigny, Bagg, 9.
  communis (d'Orbigny), Bagg, 1.
  consobrina var. emaciata (Reuss), Bagg, 1.
  consobrina var. emaciata Reuss, Bagg, 9.
  farcimen (Soldani), Bagg, 9.
  filiformis (d'Orbigny), Bagg, 9.
  hispida, Guppy, 4.
  longiscata, Guppy, 4.
  obliqua (Linné), Bagg, 1.
  obliqua (Linné), Bagg, 9.
  obliqua, Guppy, 4.
  pauperata (d'Orbigny), Bagg, 9.
  radicula (Linné), Bagg, 9.
  raphanistrum, Guppy, 4.
  roemeri (Neugeboren), Bagg, 9.
  sandbergeri (Reuss), Bagg, 1.
  soluta (Reuss), Bagg, 9.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Nodosaria soluta, Guppy, 4.
  - Nomismoceras Hyatt, Smith (J. P.), 3.
    - ? monroense Worthen, Smith (J. P.), 3.
  - Nonionina d'Orbigny, Bagg, 6.
    - affinis Reuss, Bagg, 1.
    - boueana d'Orbigny, Bagg, 9.
    - communis d'Orbigny, Bagg, 9.
    - pompilioides (Fichtel and Moll), Bagg, 9.
    - umbilicatula (Montagu), Bagg, 9.
    - scapha (Fichtel and Moll), Bagg, 6.
  - Norrisia Bayle, Arnold, 2.
    - norrisii Sowerby, Arnold, 2.
  - Notharctus (Thinolestes) anceps Marsh, Osborn, 11.
    - (Telmatolestes) crassus Marsh, Osborn, 11.
    - (Hyossodus) gracilis Marsh, Osborn, 11.
    - nunienus Cope, Osborn, 11.
    - (Tomitherium) rostratum Cope, Osborn, 11.
    - tenebrosus Leidy, Osborn, 11.
    - (Limnotherium) tyrannus Marsh, Osborn, 11.
    - venticolus n. sp., Osborn, 11.
  - Nothrotherium? shastense n. sp., Sinclair, 7.
  - Notidanus primigenius Agassiz, Eastman, 18.
  - Notolacerta missouriensis Butts, Matthew (G. F.), 25.
  - Nucleocrinus angularis Lyon, Rowley, Greene, 4, 14.
    - cucullatus n. sp., Rowley, Greene, 4.
    - greenei M. & G., Rowley, Greene, 4, 7.
    - imitator n. sp., Rowley, Greene, 4, 14.
    - lucina Hall, Rowley, Greene, 14.
    - stichteri n. sp., Rowley, Greene, 4.
    - venustus M. & G., Rowley, Greene, 4.
    - verneuili Troost, Rowley, Greene, 4.
    - verneuili var. inflatus n. var., Rowley, Greene, 4.
    - verneuili Troost, Rowley, Greene, 7.
    - verneuili var. pomum (?) Etheridge and Carpenter, Rowley, Greene, 4.
    - verneuili var. sulcatus n. var., Rowley, Greene, 4.
  - Nucleospira barrisi (White), Rowley, 1.
    - barrisi White, Weller, 2.
    - concinna Hall, Kindle, 1.
    - concinna Hall, mut. pygmæa nov., Loomis, 4.
    - pisiformis Hall, Kindle and Breger, 1.
    - ventricosa Hall, Weller, 6.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Nucula Lamarck, Arnold, 2.
    - beyrichi Geinitz, Beede, 1.
    - (Acila) castrensis Hinds, Arnold, 2.
    - corbuliformis Hall, mut. pygmæa nov., Loomis, 4.
    - corbuliformis Hall?, Kindle, 1.
    - (Acila) decisa Conrad, Dall, 10.
    - hanoverensis n. sp., Kindle, 1.
    - herzeri Nettleroth, Kindle, 1.
    - hornbyensis Whiteaves, Whiteaves, 12.
    - iowensis W. and W., Weller, 2.
    - lamellata Hall, Kindle, 1.
    - lirata Conrad, Kindle, 1.
    - lirata Conrad, mut. pygmæa nov., Loomis, 4.
    - neda Hall, Kindle, 1.
    - niotica Hall, Kindle, 1.
    - ovula Lea, Clark and Martin, 2.
    - potomacensis n. sp., Clark and Martin, 2.
    - proxima Say, Glenn, 6.
    - prunicola Dall, Glenn, 6.
    - pulchella Beede and Rogers, Beede, 1.
    - richardsoni Whiteaves, Whiteaves, 12.
    - similis J. Sowerby, Ravn, 1.
    - sinaria Dall, Glenn, 6.
    - taphria Dall, Glenn, 6.
    - (Nucula) suprastriata Carpenter, Arnold, 2.
    - (Acila) truncata Gabb, Whiteaves, 12.
    - varicosa Hall, mut. pygmæa nov., Loomis, 4.
    - ventricosa Hall, Beede, 1.
    - ? sp. undet., Weller, 6.
  - Nuculana bellistriata (Stevens), Beede, 1.
    - bellistriata attenuata Meek, Beede, 1.
  - Nuculites barretti n. sp., Shimer, 5.
    - oblongatus Conrad, mut. pygmæus nov., Loomis, 4.
    - triqueter Conrad, mut. pygmæus nov., Loomis, 4.
  - Nuttallia Dall, Arnold, 2.
  - Nyctodactylus, Williston, 6, 8.
  - Nyctopora billingsi Nich., Weller, 6.
  - Nyctosaurus Marsh, Williston, 15.
    - gracilis Marsh, Williston, 15.
  - Nyssa Gron., Perkins, 13.
    - ascoidea n. sp., Perkins, 13.
    - clarkii n. sp., Perkins, 13.
    - complanata Lx., Perkins, 13.
    - crassicostata n. sp., Perkins, 13, 17.
    - curta n. sp., Perkins, 13.
    - cylindrica n. sp., Perkins, 13.
    - elongata n. sp., Perkins, 13.
    - equicostata n. sp., Perkins, 13.
    - excavata n. sp., Perkins, 13.
    - jonesii n. sp., Perkins, 13, 17.

Paleontology—Continued.
Genera and species described—Continued.
Nyssa lævigata Lx., Perkins, 13.
lamellosa n. sp., Perkins, 13, 17.
lescurii C. H. Hitchcock, Perkins, 13, 17.
microcarpa Lx., Perkins, 13.
multicostata n. sp., Perkins, 13.
ovata n. sp., Perkins, 13.
solea n. sp., Perkins, 13.
Obolella Billings 1861, Walcott, 1.
asiatica n. sp., Walcott, 12.
cf. chromatica Billings, Matthew (G. F.), 1.
lindstrœmi n. sp., Walcott, 1.
mobergi n. sp. Walcott, 1.
(Glyptias) favosa Linnarsson, Walcott, 1.
Obolus Eichwald, Matthew (G. F.), 20.
Obolus, Walcott, 1.
acadica n. sp., Walcott, 12.
(Westonia) alandensis n. sp., Walcott, 12.
æquiputeis, Matthew (G. F.), 16.
æquiputeis n. sp., Matthew (G. F.), 20.
(Lingulella) atavus Matthew, Walcott, 6.
(Westonia) baltica n. sp., Walcott, 12.
(Lingulella) bellus Walcott, Walcott, 1.
(Lingulella) bicensis n. sp., Walcott, 1.
(Westonia) blackwelderi n. sp., Walcott, 12.
(Lingulella) bornemanni n. sp., Walcott, 1.
(Westonia) bottnica Wiman, Walcott, 12.
bretonensis, Matthew (G. F.), 16.
(Lingulella) canius n. sp., Walcott, 6.
(Lingulella) chinensis n. sp., Walcott, 12.
(Lingulella) collicia Matthew, Walcott, 6.
(Lingulella) concinnus Matthew, Walcott, 6.
(Lingulella) damesi n. sp., Walcott 12.
discus, Matthew (G. F.), 16.
discus n. sp., Matthew (G. F.), 20.
ella Hall and W., Matthew (G. F.), 19.
ella, Matthew (G. F.) 16.
(Lingulepis) eros n. sp., Walcott, 12.
(Westonia) finlandensis n. sp., Walcott, 6.
(Lingulella) fuchsi Redlich, Walcott, 12.
(Lingulepis) gregwa Matthew, Walcott, 1.
(Westonia) iphis n. sp., Walcott, 12.
ismene n. sp., Walcott, 12.

Paleontology—Continued.
Genera and species described—Continued.
Obolus (Lingulella) isse n. sp., Walcott, 12.
(Lingulella) lens Matthew, Walcott, 6.
lens Matthew (G. F.), 16.
lens n. sp., Matthew (G. F.), 20.
lens var. longus n. var., Matthew (G. F.), 20.
lens-primus, Matthew (G. F.), 16.
(Lingulella) linnarssoni n. sp., Walcott, 1.
matinalis Hall?, Walcott, 12.
? meneghini n .sp., Walcott, 1.
minimus n. sp., Walcott, 12.
nundina n. sp., Walcott 12.
obscurus n. sp., Walcott, 12.
(Lingulella) orus n. sp., Walcott, 12.
(Lingulella) pelias n. sp., Walcott, 12.
pheres n. sp., Walcott, 12.
pristinus, Matthew (G. F.), 16.
pulcher, Matthew (G. F.), 16.
(Lingulella) quadrilateralis n. sp., Walcott, 12.
(Lingulella) randomensis n. sp., Walcott, 1.
refulgens, Matthew (G. F.), 16.
(Lingulepis) rowei n. sp., Walcott, 12.
(Acritis?) rugatus n. sp., Walcott, 1.
(Bröggeria) salteri Holl, Walcott, 6.
(Lingulella) schmalensei n. sp., Walcott, 6.
(Lingulella) schucherti n. sp., Walcott, 1.
(Lingulella) septalis n. sp., Walcott, 12.
shensiensis n. sp., Walcott, 12.
(Lingulella) siemiradzkii n. sp., Walcott, 1.
(Lingulella) spatulus n. sp., Walcott, 6.
tetonensis n. sp., Walcott, 1, 12.
tetonensis ninus n. var., Walcott, 12.
(Westonia) themis n. sp., Walcott, 12.
torrentis n. sp., Matthew (G. F.), 16, 20.
triparilis n. sp., Matthew (G. F.) 16, 20.
(Lingulella) upis n. sp., Walcott, 12.
(Lingulella) wannecki Redlich, Walcott, 12.
(Lingulella) welleri n. sp., Walcott, 6.
(Westonia) wimani n. sp., Walcott, 12.
(Lingulella) winona var. convexus, Walcott, 1.
zoppi n. sp., Walcott, 1.

Paleontology—Continued.

Genera and species described—Continued.

- **Ocinebra** Leach, Arnold, 2.
  - **barbarensis** Gabb, Arnold, 2.
  - **foveolata** Hinds, Arnold, 2.
  - **interfossa** Carpenter, Arnold, 2.
  - **keepi** n. sp., Arnold, 2.
  - **lurida** Middendorf, Arnold, 2.
  - **lurida** Midd., var. **aspera** Baird, Arnold, 2.
  - **lurida** Midd. var. **cancellina** Phillippi, Arnold, 2.
  - **lurida** Midd., var. **cerritensis** n. var., Arnold, 2.
  - **lurida** Midd., var. **munda** Carpenter, Arnold, 2.
  - **micheli** Ford, Arnold, 2.
  - **perita** Hinds, Arnold, 2.
  - **poulsoni** Nuttall, Arnold, 2.
- **Odontaspis cuspidata** (Agassiz), Eastman, 18.
  - **cuspidata** (Agassiz), Case, Eastman, 1.
  - **elegans** (Agassiz), Eastman, 18.
  - **elegans** (Agassiz). Case. Eastman, 1.
  - **macrota** (Agassiz), Case, Eastman, 1.
- **Odontopleura arkansana** n. sp., Van Ingen, 2.
  - **ortoni** Foerste. Kindle and Breger, 1.
  - **parvula** (Walc.) ?, Weller 6.
- **Odontopteris papilionacea** n. sp., White (D.), 10.
- **Odostomia** Fleming, Arnold, 2.
  - (**Oscilla**) **æquisculpta** Carpenter, Arnold, 2.
  - (**Pyrgulina**) **calvertensis** n. sp., Martin, 5.
  - **conoidea** (Brocchi), Martin, 5.
  - **crenulata** n. sp., Brown (T. C.), 1.
  - ? **cretacea** n. sp., Whiteaves, 12.
  - (**Chrysallida**) **diegensis** D. & B., n. sp., Arnold, 2.
  - ? **inornata** n. sp., Whiteaves, 12.
  - (**Evalea**) **gouldii** Carpenter, Arnold, 2.
  - (**Oscilla**) **grammatospira** D. & B., n. sp., Arnold, 2.
  - (**Evalea**) **mariana** n. sp., Martin, 5.
  - (**Syrnola**) **marylandica** n. sp., Martin, 5.
  - (**Chrysallida**) **melanoides** (Conrad), Martin, 5.
  - (**Amaura**) **nuciformis**. var. **avellana** Carpenter, Arnold, 2.
  - (**Amaura**) **pupiformis** Carpenter, Arnold, 2.
  - **semicostata** n. sp.. Brown (T. C.), 1.
  - (**Evalea**) **stearnsii** D. & B., n. sp., Arnold, 2.
  - **tenuis** Carpenter, Arnold, 2.
  - (**Ivara**) **terricula** (Carpenter) D. & B., Arnold, 2.

Paleontology—Continued.

Genera and species described—Continued.

- **Odostomia trapaquara** (Harris), Clark and Martin, 2.
- **Ogygopsis klotzi** Rom. sp., Wooodward (H.), 1.
- **Ogmophus arenarum** n. sp., Douglass, 8.
- **Olbodotes** Osborn, Wortman, 13.
- **Olbodotes copei** n. gen. and sp., Osborn, 11.
- **Olcostephanus maloníanus** n. sp., Cragin, 2.
  - (? **Simburskites** Pavlow and Lamplugh) n. sp., Madsen, 1.
- **Olenellus thompsoni** (Hall), Weller, 6.
  - ? sp. und., Weller, 6.
  - (**Holmia**) **walcottanus** n. sp., Wanner, 1.
- **Oligoporus** Meek and Worthen, Klem, 1.
  - **coreyi** Meek and Worthen, Klem, 1.
  - **danæ** Meek and Worthen, Klem, 1.
  - ? **minutus** Beede, Beede, 1.
  - **missouriensis** Jackson, Klem, 1.
  - **mutatus** Keyes, Klem, 1.
  - **nobilis** Meek and Worthen, Klem, 1.
  - **parvus** Hambach, Klem, 1.
- **Oligosimus** Leidy, Williston, 14.
- **Oliva californica** n. sp., Anderson, 7.
  - **furtheyana** n. sp., Anderson, 7.
  - **harrisi** n. sp., Martin, 5.
  - **litterata** Lamarck, Martin, 5.
- **Olivanites**, Hambach, 1.
- **Olivella** Swainson, Arnold, 2.
  - **affluens** n. sp., Casey, 4.
  - **biplicata** Sowerby, Arnold, 2.
  - **intorta** Carpenter, Arnold, 2.
  - **pedroana** Conrad, Arnold, 2.
- **Olophrum arcanum** n. sp., Scudder, 1.
  - **celatum** n. sp., Scudder, 1.
  - **dejectum** n. sp., Scudder, 1.
- **Omomys ameghini** n. sp., Wortman, 14.
  - **pucillus** Marsh, Wortman, 14.
- **Omphalius** Philippi, Arnold, 2.
- **Omphyma** Rafinesque and Clifford, Lambe, 2.
  - **eryphile** Billings (sp.), Lambe, 2.
  - **verrucosa** Rafinesque and Clifford, Lambe, 2.
- **Onchosaurus** Gervais, Eastman, 14.
- **Onoclea sensibilis fossilis** Newb., Knowlton, 12.
- **Ontaria** n. gen., Clarke, 19.
  - **accincta** n. sp., Clarke, 19.
  - **affiliata** n. sp., Clarke, 19.
  - **clarkei** Beushausen (sp.), Clarke, 19.
  - **concentrica** von Buch, Clarke, 19.
  - **halli** n. sp., Clarke, 19.
  - **pontiaca** n. sp., Clarke, 19.
  - **suborbicularis** Hall (sp.), Clarke, 19.
- **Onychiopsis psilotoides** (Stokes and Webb) Ward, Fontaine, 5.
  - **psilotoides** (Stokes and Webb) Ward n. comb., Fontaine, 2.
- **Onychocardium** n. gen., Whitfield, 11.
  - **portlandicum** n. sp., Whitfield, 11.

Paleontology—Continued.
  Genera and species described—Continued.
    Onychochilus (?) nitidulus? Clarke, Wood (Elvira), 1.
    Oodectes perpestoides n. gen. et sp., Wortman, 3, 4.
    Opalia H. and A. Adams, Arnold, 2.
      anomala Stearns, Arnold, 2.
      borealis Gould, Arnold, 2.
      crenatoides Carpenter, var. insculpta Carpenter, Arnold, 2.
      varicostata Stearns, Arnold, 2.
    Ophiceras Griesbach, Hyatt and Smith, 1.
      dieneri n. sp., Hyatt and Smith, 1.
      spenceri n. sp., Hyatt and Smith, 1.
    Ophileta alturensis n. sp., Sardeson, 2.
      complanata Vanuxem, Cleland, 3.
      fausta n. sp., Sardeson, 1.
      levata Vanuxem, Cleland, 3.
      ? sp. undet., Weller, 6.
    Ophioderma? sp., Clark (W. B.), 7.
    Ophthalmosaurus, Gilmore, 3.
    Ophthalmosaurus, Merriam, 6.
    Oppelia? fallax (Castillo and Aguilera), Cragin, 2.
    Orbicella Dana 1846, Vaughan, 2.
      acropora (Linnæus), Vaughan, 2.
      cavernosa (Linnæus), Vaughan, 2.
      tenuis Duncan, Vaughan, 2.
      ? texana n. sp., Vaughan, 17.
    Orbiculoidea ampla (Hall), Weller, 6.
      convexa (Shumard), Beede, 1.
      doria Hall, Kindle, 1.
      jervensis Barrett, Weller, 6.
      lamellosa (Hall), Weller, 6.
      lodiensis (Vanuxem)?, Kindle, 1.
      manhattanensis (Meek and Hayden), Beede, 1.
      manhattanensis Meek and Hayden, Girty, 3.
      missouriensis (Shumard), Beede, 1.
      parva n. sp. (Rowley), Greene, 2.
      sp., Girty, 3.
      sp. undet., Weller, 6.
    Orbiculus Megerle, Dall, 8.
    Orbignyella n. gen., Ulrich and Bassler, 2.
      sublamellosa n. sp., Ulrich and Bassler, 2.
    Orbitremites grandis n. sp., Rowley, Greene, 5.
      oppelti n. sp., Rowley, Greene, 5.
    Orbulina universa d'Orbigny, Bagg, 9.
    Orchestes avus n. sp., Scudder, 1.
    Oreodon macrorhinus n. sp., Douglass, 8.
      robustum n. sp., Douglass, 4.
    Oreohelix yavapai compactula n. subsp., Cockerell, 2.
    Oricardinus sheari Cope, Hay, 10.
      tortus Cope, Hay, 10.
    Oriostoma huntingtonensis n. sp., Kindle and Breger, 1.
      huntingtonensis var. alternatum n. var., Kindle and Breger, 1.
      ? opercula, Kindle and Breger, 1.

Paleontology—Continued.
  Genera and species described—Continued.
    Oriostoma plana n. sp., Kindle and Breger, 1.
      sp. undet., Kindle and Breger, 1.
    Ornithichnites gallinuloides King, Matthew (G. F.), 25.
    Ornithoides n. gen., Matthew (G. F.), 21, 30.
      ? adamsi n. sp., Matthew (G. F.), 30.
      trifidus Dawson, Matthew (G. F.), 30.
    Ornitholestes hermanni n. gen. and sp., Osborn, 16.
      hermanni Osborn, Lambe, 9.
    Ornithomimus altus n. sp., Lambe, 3, 9.
      sedens Marsh, Lambe, 9.
    Ornithostoma, Langley, 2.
    Ornithostoma, Lucas, 18.
      ingens Williston, Lucas, 10.
    Orodus intermedius n. sp., Eastman, 10.
    Orohippus? sp., Hatcher, 3.
    Orophocrinus conicus? W. & Sp., Rowley, 4.
      stelliformis O. & S., Rowley, 4.
    Orophosaurus Cope, Williston, 14.
    Orthidium lamellosa n. sp., Raymond (P. E.), 7.
    Orthis Dalman, Grabau, 1.
      acutiplicata n. sp., Raymond (P. E.), 7.
      corpulenta n. sp., Sardeson, 9.
      (Orusia?) eurekensis Walcott, Walcott, 12.
      (Finkelnburgia) finkelnburgi n. sp., Walcott, 12.
      flabellites Foerste, Grabau, 1.
      flabellites Foerste, Kindle and Breger, 1.
      flabellites Foerste, Weller, 6.
      ignicula n. sp., Raymond (P. E.), 7.
      lenticularis Dalman, Matthew (G. F.), 20.
      (Orusia) lenticularis Wahlenberg, Walcott, 12.
      (Orusia) lenticularis atrypoides Matthew, Walcott, 12.
      (Orusia) lenticularis lyncioides Matthew, Walcott, 12.
      macrior n. sp., Sardeson, 9.
      minnesotensis n. sp., Sardeson, 9.
      newtonensis n. sp., Weller, 6.
      (Finkelnburgia) osceola n. sp., Walcott, 12.
      (Finkelnburgia) osceola corrugata n. var., Walcott, 12.
      (Billingsella) pepina Hall, Sardeson, 2.
      petræ n. sp., Sardeson, 9.
      (?) punctostriata Hall, Grabau, 1.
      rogata n. sp. or var., Sardeson, 9.
      ? subnodosa Hall, Kindle and Breger, 1.
      tersus n. sp., Sardeson, 9.
      (Dalmanella) testudinaria, Hayes and Ulrich, 1.

Paleontology—Continued.
  Genera and species described—Continued.
    Orthis tricenaria Conrad, Weller, 6.
      tricenaria Conrad, Ruedemann, 2.
      See also Plectorthis.
    Orthisina alberta Walcott, Matthew (G. F.), 19.
    Orthoceras Breyn, Grabau, 1.
    Orthoceras Breyn, Hyatt and Smith, 1.
      algomense n. sp., Parks, 5.
      annulatum Sowerby, Grabau, 1.
      (Kionoceras) angulatum Wahlenberg, Kindle and Breger, 1.
      (Dawsonoceras) cf. annulatum Sowerby, Kindle and Breger, 1.
      (Dawsonoceras) annulatum var. americanum Foord, Kindle and Breger, 1.
      caldwellensis Miller and Gurley, Kindle, 1.
      crebescens Hall, Clarke and Ruedemann, 1.
      (Kionoceras) delphiensis n. sp., Kindle and Breger, 1.
      ekwanense n. sp., Whiteaves, 17.
      extremum n. sp., Parks, 5.
      indianense Hall, Weller, 2.
      (Kionoceras) kentlandensis n. sp., Kindle and Breger, 1.
      marcellense Vanuxem, Wood (Elvira), 1.
      medullare Hall, Grabau, 1.
      medullare Hall, Kindle and Breger, 1.
      minnesotense n. sp., Sardeson, 1.
      multiseptum Hall, Grabau, 1.
      (Geisonoceras) niagarense Hall, Kindle and Breger, 1.
      nuntium Hall, Loomis, 4.
      (Kionoceras) orus Hall, Kindle and Breger, 1.
      primigenium Vanuxem, Cleland, 3.
      pulcher n. sp., Parks, 5.
      rectum Worthen, Clarke and Ruedemann, 1.
      scintilla Hall (?), mut. mephisto Clarke, Loomis, 4.
      shastense n. sp., Hyatt and Smith, 1.
      subulatum Hall, mut. pygmæum nov., Loomis, 4.
      tenuistriatum (Hall), Weller, 6.
      tenuitextum (Hall), Weller, 6.
      thoas Hall, Kindle, 1.
      trusitum n. sp., Clarke and Ruedemann, 1.
      sp., Parks, 5.
      sp., Kindle, 1.
      sp. undet., Sardeson, 1.
      sp. undet., Weller, 6.
    Orthodactylus E. Hitchcock, Lull, 2.
      floriferus E. Hitchcock, Lull, 2.
      introvergens E. Hitchcock, Lull, 2.
      linearis E. Hitchcock, Lull, 2.
    Orthodesma canaliculatum Ulrich, Weller, 6.

Paleontology—Continued.
  Genera and species described—Continued.
    Orthonychia formosa Keyes?, Girty, 3.
      obtusa n. sp., Whiteaves, 17.
    Orthostropia Hall, Grabau, 1.
      (?) fasciata Hall, Grabau, 1.
      strophomenoides (Hall), Weller, 6.
    Orthosurcula n. gen., Casey, 5.
    Orthotheca bayonet n. sp., Matthew (G. F.), 1.
      cylindrica Grabau, Sears, 1.
      emmonsi Ford, Sears, 1.
      pugio n. sp., Matthew (G. F.), 1.
      sica n. sp., Matthew (G. F.), 1.
      stilletto, Matthew (G. F.), 1.
    Orthothetes Fischer de Waldheim, Grabau, 1.
      bellulus Clarke, Raymond (P. E.), 3, 4.
      chemungensis Conrad, Raymond (P. E.), 4.
      chemungensis var. arctistriatus Hall, Raymond (P. E.), 3.
      chemungensis arctistriatus Hall, Kindle, 1.
      chemungensis var. pectinacea Hall, Raymond (P. E.), 3.
      deckerensis n. sp., Weller, 6.
      hydraulicus Whitfield), Grabau, 1.
      inæqualis (Hall), Weller, 2.
      inflatus? (W. and W.), Weller, 2.
      inæqualis Hall, Girty, 3.
      interstriatus (Hall), Weller, 6.
      minutus n. sp., Cumings, 2.
      pandora (Bill.), Weller, 6.
      subplanus Conrad, Kindle and Breger, 1.
      subplanus Conrad 1842, Beecher, 1.
      subplanus (Conrad), Grabau, 1.
      woolworthanus Hall, Shimer, 5.
      woolworthana (Hall), Weller, 6.
      sp. undet., Weller, 2, 6.
    Orthotichia schuchertensis n. sp., Girty, 3.
    Orusia n. subg. of Orthis, Walcott, 12.
    Orycterocetus Leidy, Case, 9.
      crocodilinus (?) Cope, Case, 9.
    Oryctomya claibornensis Dall, Dall, 8.
    Oscilla A. Adams, Arnold, 2.
    Osmeroides Agassiz, Loomis, 1.
      evolutus Cope?, Loomis, 1.
      polymicrodus Stewart, Loomis, 1.
    Osmunda montanensis n. sp., Knowlton, 18.
    Osmundites skidegatensis n. sp., Penhallow, 3.
      skidegatensis Penh., Penhallow, 4.
    Osteopygis Cope, Wieland, 6.
      gibbi n. sp., Wieland, 6.
    Ostrea (Linné) Lamarck, Arnold, 2.
      anomioides var. nanus n. var., Johnson (D. W.), 5.
      arrosis n. sp., Aldrich, 5.
      aviculiformis n. sp., Anderson, 7.
      carolinensis Conrad, Glenn, 6.
      compressirostra Say, Clark and Martin, 2.

Paleontology—Continued.

Genera and species described—Continued.

- Ostrea var. alepidota Dall, Clark and Martin, 2.
  - eduliformis Schlotheim, Madsen, 1.
  - lugubris Conrad, Johnson (D. W.), 5.
  - lurida Carpenter, Arnold, 2.
  - percrassa Conrad, Glenn, 6.
  - sellæformis Conrad, Clark and Martin, 2.
  - sellæformis var. thomasii (Conrad), Glenn, 6.
  - trigonalis Conrad, Glenn, 6.
  - (Gryphæostrea) vomer (Morton), Clark and Martin, 2.
  - sp., Glenn, 6.
  - sp., Shattuck, 8.
  - sp., Cragin, 2.
- Otidophyton hymenophylloides n. sp., White (D.), 18.
- Otocœlidæ Cope, Case, 12.
- Otodus obliquus Agassiz, Eastman, 1, 18.
- Otouphepus n. gen., Cushman, 1.
  - magnificus n. sp., Cushman, 1.
- Otozamites oregonensis n. sp., Fontaine, 2.
- Otozoum E. Hitchcock, Lull, 2.
  - caudatum C. H. Hitchcock, Lull, 2.
  - moodii E. Hitchcock, Lull, 2.
  - parvum C. H. Hitchcock, Lull, 2.
- Otusia n. subg. of Billingsella, Walcott, 12.
- Ovula symmetrica n. sp., Aldrich, 2.
- Owenites n. gen., Hyatt and Smith, 1.
  - koeneni n. sp., Hyatt and Smith, 1.
- Oxyæna, Matthew (W. D.), 19.
- Oxyænidæ, Matthew (W. D.), 19.
- Oxyclænidæ, Matthew (W. D.), 19.
- Oxydactylus n. gen., Peterson, 1.
- Oxydactylus, Matthew (W. D.), 15.
  - brachyodontus n. sp., Peterson, 1.
  - brachyodontus, Matthew (W. D.), 15.
  - longipes n. sp., Peterson, 1.
  - longipes, Matthew (W. D.), 15.
- Oxydiscus cristatus Safford, Hayes and Ulrich, 1.
  - subacutus Ulrich, Weller, 6.
- Oxyrhina Agassiz, Eastman, 18.
  - desorii Agassiz, Eastman, 18.
  - hastalis Agassiz, Eastman, 18.
  - minuta Agassiz, Eastman, 18.
  - sillimani Gibbes, Eastman, 18.
- Pachydesma Conrad, Dall, 8.
- Pachyæna gigantea O. and W., Matthew (W. D.), 1.
- Pachydiscus binodatus n. sp., Whiteaves, 12.
  - haradai Jimbo, Whiteaves, 12.
  - henleyensis n. sp., Anderson, 3.
  - merriami n. sp., Anderson, 3.
  - multisulcatus n. sp., Whiteaves, 12.
  - neevesii n. sp., Whiteaves, 12.
  - newberryanus Meek sp., Whiteaves, 12.

Paleontology—Continued.

Genera and species described—Continued.

- Pachydiscus newberryanus Meek (not Gabb), Anderson, 3.
  - otacodensis Stoliczka sp., Whiteaves, 12.
  - (haradai? var.) perplicatus, Whiteaves, 12.
  - sacramenticus n. sp., Anderson, 3.
  - suciensis Meek sp., Whiteaves, 12.
  - lævicanaliculatus n. sp., Lasswitz, 1.
- Pachydistya foliata Ulr., Sardeson, 4.
- Pachymya austinensis (?) Shumard, Shattuck, 8.
- Pachyphyllum Milne Edwards and Haime, Lambe, 2.
  - devoniense Milne Edwards and Haime, Lambe, 2.
  - minutissimum n. sp., Webster, 3.
  - woodmani var. ruddi n. var., Webster, 3.
  - woodmani var. gregarium n. var., Webster, 3.
- Pachypoma Gray, Arnold, 2.
  - inæquale Martyn, Arnold, 2.
- Pachyrhizodus Dixon, Stewart, 1.
- Pachyrhizodus Dixon, Loomis, 1.
- Pachyrhizodus Agassiz, Hay, 10.
  - caninus Cope, Hay, 10.
  - caninus Cope, Loomis, 1.
  - caninus Cope, Stewart, 1.
  - curvatus n. sp., Loomis, 1.
  - ferox Stewart, Loomis, 1.
  - latimentum Cope, Loomis, 1.
  - latimentum? Cope, Stewart, 1.
  - leptognathus Stewart, Loomis, 1.
  - leptognathus Stewart, Stewart, 1.
  - leptopsis Cope, Hay, 10.
  - leptopsis Cope, Loomis, 1.
  - leptopsis Cope, Stewart, 1.
  - minimus Stewart, Stewart, 1.
  - sheari Cope, Loomis, 1.
  - velox Stewart, Stewart, 1.
- Palæacmæa irregularis n. sp., Raymond (P. E.), 7.
- Palæarctomys n. gen., Douglass, 8.
  - macrorhinus n. sp., Douglass, 8.
  - montanus n. sp., Douglass, 8.
- Palæobolus n. subgen., Matthew (G. F.), 2, 20.
  - bretonensis, Matthew (G. F.), 2, 20.
- Palæochæta devonica nov., Clarke, 18.
- Palæohatteria Credner, Osborn, 19.
- Palæocorystes harveyi Woodward, Whiteaves, 12.
- Palæodictyon magnum laxum n. subsp., Ulrich, 4.
  - singulare Heer, Ulrich, 4.
- Palæodictyota n. gen., Whitfield, 5.
  - ramulosa Spencer sp., Whitfield, 5.
- Palæolagus Leidy, Matthew (W. D.), 6.
  - ? agapetillus Cope, Matthew (W. D.), 6.

Paleontology—Continued.
Genera and species described—Continued.
- Palæolagus brachyodon n. sp., Matthew (W. D.), 9.
  - haydeni Cope, Matthew (W. D.), 6.
  - intermedius Matthew, Matthew (W. D.), 2, 6.
  - temnodon n. sp., Douglass, 4.
  - temnodon Douglass, Matthew (W. D.), 9.
  - turgidus Cope, Matthew (W. D.), 6.
- Palæomeryx, Douglass, 1.
- Palæomeryx, Matthew (W. D.), 14.
  - americanus n. sp., Douglass, 1.
  - americanus Douglass, Matthew (W. D.), 14.
  - antilopinus Scott, Matthew (W. D.), 14.
  - ? borealis ?, Douglass, 8.
  - borealis Cope, Matthew (W. D.), 14.
  - madisonius n. sp., Douglass, 1.
  - madisonius Douglass, Matthew (W. D.), 14.
  - sp., Matthew (W. D.), 14.
- Palæoneilo Hall, Burckhardt and Scalia, 1.
  - aguileræ n. sp., Burckhardt and Scalia, 1.
  - barrisi (W. and W.), Weller, 2.
  - bossei n. sp., Burckhardt and Scalia, 1.
  - brevicula n. sp., Clarke, 19.
  - broilii n. sp., Burckhardt and Scalia, 1.
  - burkarti n. sp., Burckhardt and Scalia, 1.
  - circularis n. sp., Burckhardt and Scalia, 1.
  - constricta Conrad, Clarke, 19.
  - constricta Conrad mut. pygmæa nov., Clarke, Loomis, 4.
  - cordiformis n. sp., Burckhardt and Scalia, 1.
  - cordobæ n. sp., Burckhardt and Scalia, 1.
  - costata n. sp., Burckhardt and Scalia, 1.
  - emarginata (Con.), Weller, 6.
  - frechi n. sp., Burckhardt and Scalia, 1.
  - humboldti n. sp., Burckhardt and Scalia, 1.
  - inflata n. sp., Burckhardt and Scalia, 1.
  - ledæformis n. sp., Burckhardt and Scalia, 1.
  - linguata n. sp., Clarke, 19.
  - longa n. sp., Burckhardt and Scalia, 1.
  - mexicana n. sp., Burckhardt and Scalia, 1.
  - microdonta (Win.), Weller, 2.
  - muricata n. sp., Clarke, 19.

Paleontology—Continued.
Genera and species described—Continued.
- Palæoneilo ordoñezi n. sp., Burckhardt and Scalia, 1.
  - petila n. sp., Clarke, 19.
  - plana Hall, mut. pygmæa nov., Loomis, 4.
  - quadrata n. sp., Burckhardt and Scalia, 1.
  - rectangularis n. sp., Burckhardt and Scalia, 1.
  - triangularis n. sp., Burckhardt and Scalia, 1.
  - villadæ n. sp., Burckhardt and Scalia, 1.
  - waitzi n. sp., Burckhardt and Scalia, 1.
  - zacatecana n. sp., Burckhardt and Scalia, 1.
  - sp., Kindle, 1.
- Palæonictidæ, Matthew (W. D.), 19.
- Palæophycus clavifrons n. sp., Herzer, 2,
- Palæoscincus asper Lambe, Stanton and Hatcher, 1.
  - asper n. sp., Lambe, 3.
  - costatus Leidy, Lambe, 3.
  - costatus Leidy, Stanton and Hatcher, 1.
- Palæosinopa veterrima n. gen. et sp., Matthew (W. D.), 1.
- Palæostachya ? sp., White (D.), 18.
- Palæotrochus Hall, Clarke, 19.
  - præcursor Clarke, Clarke, 19.
- Palamopus E. Hitchcock, Lull, 2.
  - anomalus E. Hitchcock, Lull, 2.
  - divaricans (E. Hitchcock), Lull, 2.
  - gracilipes (E. Hitchcock), Lull, 2.
  - rogersianus (E. Hitchcock), Lull, 2.
- Paleoptuna sp. undet., Kindle and Breger, 1.
- Paleorhinus bransoni n. gen. and sp., Williston, 23.
- Paleschara, Cumings, 9.
- Paliurus integrifolius Hollick, Hollick, 11.
  - integrifolius Hollick (?), Berry, 2.
- Palmicellaria convoluta n. sp., Ulrich and Bassler, 4.
  - punctata n. sp., Ulrich and Bassler, 4.
- Paludestrina d'Orbigny, Arnold, 2.
  - curta n. sp., Arnold, 2.
  - longinqua Gould (Pilsbry), Stearns (R. E. C.), 2.
  - protea Gould (Pilsbry), Stearns (R. E. C.), 2.
  - stokesi n. sp., Arnold, 2.
- Pandora, Arnold, 2.
- Pandora Ilwass, Dall, 8.
  - (Kennerleyia) arctica n. sp., Dall, 8.
  - (Kennerleyia) arenosa Conrad, Dall, 8.

Paleontology—Continued.

Genera and species described—Continued.

- Pandora (Kennerlia) bicarinata Carpenter, Arnold, 2.
  - (Clidiophora) crassidens Conrad, Glenn, 6.
  - (Clidiophora) crassidens Conrad, Dall, 8.
  - (Kennerleyia) dodona n. sp., Dall, 8.
  - (Kennerlia) filosa Carpenter, Arnold, 2.
  - (Clidiophora) gouldiana Dall, Dall, 8.
  - (Kennerleyia) lata n. sp., Dall, 8.
  - (Kennerleyia) lata Dall, Glenn, 6.
  - olidrophora gouldiana Dall, Sears, 1.
  - (Heteroclidus) punctata Conrad, Dall, 8.
  - (Clidiophora) trilineata Say, Dall, 8.
- Panenka canadensis n. sp., Whiteaves, 4.
  - radians (Hall), Kindle, 1.
- Panomya Gray, Arnold, 2.
  - ampla Dall, Arnold, 2.
- Panopea Ménard, Arnold, 2.
  - americana Conrad, Glenn, 6.
  - concentrica Gabb, var., Whiteaves, 12.
  - elongata Conrad, Clark and Martin, 2.
  - generosa Gould, Arnold, 2.
  - goldfussi, Wagner, Glenn, 6.
  - whitfieldi Dall, Glenn, 6.
- Pantolambda (?), Douglass, 3.
  - cavirictis Cope (?), Douglass, 3.
  - (?) sp. Douglass, 3.
- Pantolestes Cope, Matthew (W. D.), 23.
- Pantosaurus Marsh, Williston, 14.
- Paphia Bolten, Dall, 8.
  - section Baroda Stoliczka, Dall, 8.
  - section Callithaca Dall, Dall, 8.
  - section Icanotia Stoliczka, Dall, 8.
  - section Myrsus H. and A. Adams, Dall, 8.
  - section Paphia Bolten, s. s., Dall, 8.
  - section Paratapes Dall, Dall, 8.
  - section Polititapes Chiamenti, Dall, 8.
  - section Protapes Dall, Dall, 8.
  - section Pullastra Sowerby, Dall, 8.
  - section Ruditapes Chiamenti, Dall, 8.
  - section Tapes Megerle s. s., Dall, 8.
- Papyridea harrimani n. sp., Dall, 10.
- Parabolina dawsoni, n. sp., Matthew (G. F.), 9, 20.
  - cfr. limitis Brœg., Matthew (G. F.), 12.
  - quadrata n. sp., Matthew (G. F.), 12.
- Parabolinella? cf. limitis Brög., Matthew (G. F.), 20.
- Parabolinella ? quadrata, Matthew (G. F.), 20.
- Paracardium Barrande, Clarke, 19.
  - delicatula n. sp., Clarke, 19.
  - doris Hall, Clarke, 19.
- Paracyathus granulosus Vaughan, Vaughan, 16.
  - marylandicus n. sp., Vaughan, 1.
  - pedroensis Vaughan n. sp., Arnold, 2.
  - vaughani Gane, Vaughan, 19.
- Paracyclas elliptica Hall, Kindle, 1.
  - elongata Nettleroth, Kindle, 1.
  - lirata (Conrad), Kindle, 1.
  - lirata Conrad, mut. pygmæa nov., Loomis, 4.
  - octerlonii Nettleroth, Kindle, 1.
  - ohioensis (Meek), Kindle, 1.
- Paraganides n. gen., Hyatt and Smith, 1.
  - californicus n. sp., Hyatt and Smith, 1.
- Parahippus Leidy, Gidley, 5.
- Paralecanites Diener, Hyatt and Smith, 1.
  - arnoldi n. sp., Hyatt and Smith, 1.
- Paralegoceras Hyatt, Smith (J. P.), 3.
  - baylorense White, Smith (J. P.), 3.
  - iowense Meek and Worthen, Smith (J. P.), 3.
  - newsomi n. sp., Smith (J. P.), 3.
  - texanum Shumard, Smith (J. P.), 3.
- Paralia sulcata (Ehrenberg), Boyer, 1.
- Paramya subovata Conrad, Glenn, 6.
- Paramylodon n. gen., Brown (B.), 1.
  - nebrascensis n. sp., Brown (B.), 1.
- Paranannites n. gen., Hyatt and Smith, 1.
  - aspenensis n. sp., Hyatt and Smith, 1.
- Paraphorhynchus n. gen., Weller, 9.
  - elongatum n. sp., Weller, 9.
  - striatocostatum (M. & W.), Weller, 9.
  - transversum n. sp., Weller, 9.
- Parapopanoceras Haug, Hyatt and Smith, 1.
- Parapsonema cryptophysa Clarke, Fuchs, 1.
- Paraptyx n. gen., Clarke, 19.
  - ontario n. sp., Clarke, 19.
- Parasmilia texana n. sp., Vaughan, 17.
- Parastarte Conrad, Dall, 8.
  - hemiplicata (Hall), Weller, 6.
  - triquetra Conrad, Dall, 8.
- Paratapes Stoliczka, Dall, 8.
- Paratissotia n. gen., Hyatt, 1.
- Paratropites Mojsisvoics, Hyatt and Smith, 1.
- Paratropites Mojsisovics, Smith (J. P.), 5.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Paratropites (Gymnotropites) americanus n. sp., Hyatt and Smith, 1.
    - dittmari Mojsisovics, Smith (J. P.), 5.
    - sellai Mojsisovics, Hyatt and Smith, 1.
  - Parazyga hirsuta Hall, Kindle, 1.
  - Pariostegus Cope, Branson, 2.
    - myops Cope, Branson, 2.
  - Pariotichus Cope, Broili, 2.
    - aduncus Cope, Broili, 2.
    - aguti Cope, Broili, 2.
    - brachyops Cope, Broili, 2.
    - incisivus Cope, Broili, 2.
    - isolomus Cope, Broili, 2.
    - ordinatus Cope, Broili, 2.
    - ordinatus Cope, Case, 3.
    - sp., Cope, Case, 3.
  - Parmophorella (?) paupera Bill., Matthew (G. F.), 1.
  - Parmulina Dall, Dall, 8.
  - Paronychodon lacustris Cope, Stanton and Hatcher, 1.
  - Parvilucina Dall, Dall, 8.
  - Patella sp., Shattuck, 8.
  - Patellostium bellum Keyes, Girty, 3.
    - ourayense Gurley, Girty, 3.
  - Paterula amii Schuchert, Ruedemann, 1.
  - Patinopecten Dall, Arnold, 2.
  - Patriofelis ferox (Marsh), Osborn, 36.
    - ferox Marsh, Wortman, 10.
  - Patrobus decessus n. sp., Scudder, 1.
    - frigidus n. sp., Scudder, 1.
  - Pecopteris virginiensis Fontaine, Fontaine, 5.
  - Pecten Müller, Arnold, 2.
    - (Pecten) bellus Conrad, Arnold, 2.
    - (Patinopecten) caurinus Gould, Arnold, 2.
    - (Pseudamusium) cerinus Conrad, Glenn, 6.
    - choctawensis Aldrich, Clark and Martin, 2.
    - (Chlamys) clintonius Say, Glenn, 6.
    - coalingaensis Arnold, Anderson, 7.
    - (Chlamys) coccymelus Dall, Glenn, 6.
    - dalli Clark, Clark and Martin, 2.
    - (Pecten) ,dentatus Sowerby, Arnold, 2.
    - (Lyropecten) dilleri n. sp., Dall, 4.
    - duplicicosta (?) Roemer, Shattuck, 8.
    - etchegoini n. sp., Anderson, 7.
    - (Patinopecten) expansus Dall, Arnold, 2.
    - (Hinnites) giganteus Gray, Arnold, 2.
    - (Chlamys) hastatus Sowerby, Arnold, 2.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Pecten (Pecten) hemphilli Dall, Arnold, 2.
    - (Chlamys) hericeus Gould, Arnold, 2.
    - (Chlamys) hericeus var. strategus Dall, Arnold, 2.
    - (Amusium) humphreysii Conrad, Glenn, 6.
    - (Pecten) humphreysii Conrad, Glenn, 6.
    - (Camptonectes) insutus n. sp., Cragin, 2.
    - (Chlamys) jeffersonius Say, Glenn, 6.
    - jeffersonius var. edgecombensis (Conrad), Glenn, 6.
    - jeffersonius var. septenarius Say, Glenn, 6.
    - johnsoni Clark, Clark and Martin, 2.
    - (Chlamys) jordani n. sp., Arnold, 2.
    - (Chlamys) latiauritus Conrad, Arnold, 2.
    - (Chlamys) latiauritus Con., var. fragilis n. var., Arnold, 2.
    - (Chlamys) latiauritus Con., var. monotimeris Con., Arnold, 2.
    - (Chlamys) madisonius Say, Glenn, 6.
    - (Chlamys) marylandicus Wagner, Glenn, 6.
    - (Amusium) mortoni Ravenel, Glenn, 6.
    - (Plagioctenium) newsomi n. sp., Arnold, 2.
    - (Chlamys) opuntia Dall, Arnold, 2.
    - quinquecostatus? (Sowerby), Shattuck, 8.
    - roemeri (Hill), Shattuck, 8.
    - (Chlamys) rogersi Conrad, Glenn, 6.
    - (Pecten) stearnsii Dall, Arnold, 2.
    - (Pseudamusium) subminutus n. sp., Aldrich, 2.
    - (Nodipecten) subnodosus Sowerby, Arnold, 2.
    - (Plagioctenium) subventricosus Dall, Arnold, 2.
    - texanus Roemer, Shattuck, 8.
    - (Plagioctenium) ventricosus Sowerby, Arnold, 2.
    - sp., Clark and Martin, 2.
    - sp., Madsen, 1.
    - (Chlamys) sp., Dall, 10.
  - Pecopteris arborescens (Schloth.) Brongn., White (D.), 10.
    - (Cheilanthes) sepulta Newb. (?), Hollick, 5.
  - Pectunculus pacificus n. sp., Anderson, 3.
    - septentrionalis Middendorf, Anderson, 7.

Paleontology—Continued.
Genera and species described—Continued.
Pectunculus veatchii Gabb sp., Whiteaves, 12.
Pelycodus Cope, Osborn, 11.
frugivorus Cope, Osborn, 11.
jarrovii Cope, Osborn, 11.
tutus Cope, Osborn, 11.
Pelecorapis Cope, Cragin, 1.
microlepis n. sp., Cragin, 1.
varius Cope, Cragin, 1.
Pelycosauria, Case, 2.
Pelecyora Dall, Dall, 8.
Pentacrinus sp. cf. andreæ de Loriol, Madsen, 1.
Pentagonaster browni n. sp., Weller, 8.
Pentagonia unisulcata (Conrad), Kindle, 1.
Pentamerella arata (Conrad), Kindle, 1.
pavilonensis Hall, Kindle, 1.
thusnelda Nettleroth, Kindle, 1.
Pentamerus Sowerby, Grabau, 1.
circularis n. sp., Weller, 6.
oblongus Sowerby, Grabau, 1.
oblongus var. compressa n. var., Kindle and Breger, 1.
oblongus var. cylindricus Hall and Whitfield, Kindle and Breger, 1.
Pentremites Say, Hambach, 1.
abbreviatus Hambach, Hambach, 1.
altus n. sp. (Rowley), Greene, 2.
angustus n. sp., Hambach, 1.
bradleyi Meek, Hambach, 1.
calycinus Lyon, Rowley, Greene, 7.
cavus n. sp., Ulrich, 8.
cherokeus? Troost, Rowley, Greene, 7.
chesterensis, Hambach, Rowley, Greene, 7.
conoideus Hall, Hambach, 1.
conoideus Hall, Rowley, Greene, 7.
conoideus Hall, Rowley, 4.
conoideus Hall, Ulrich, 8.
Pentremites conoideus Hall, Rowley, Greene, 5.
conoideus var. amplus n. var., Rowley, Greene, 5.
conoideus var. perlongus n. var., Rowley, Greene, 5.
florealis v. Schlotheim, Hambach, 1.
florealis Schlotheim, Ulrich, 8.
fohsi n. sp., Ulrich, 8.
fohsi var. marionensis n. var., Ulrich, 8.
godoni De France, Ulrich, 8.
godoni Defrance, Rowley, Greene, 5.
godoni De France, Rowley, Greene, 7.
kirki n. sp., Hambach, 1.
koninckanus Hall, Rowley, Greene, 5.

Paleontology—Continued.
Genera and species described—Continued.
Pentremites koninckanus Hall, Rowley, Greene, 14.
koninckanus Hall, Rowley, Greene, 7.
leda Hall, Loomis, 4.
obesus Lyon, Ulrich, 8.
obesus Lyon, Rowley, Greene, 7.
obtusus n. sp., Hambach, 1.
pyramidatus n. sp., Ulrich, 8.
pyriformis Say, Ulrich, 8.
pyriformis Say, Rowley, Greene, 5.
pyriformis Say, Hambach, 1.
pyriformis Say, Rowley, Greene, 7.
robustus Lyon, Rowley, Greene, 7.
rusticus n. sp., Hambach, 1.
serratus n. sp., Hambach, 1.
sulcatus Roemer, Hambach, 1.
sulcatus? Roemer, Rowley, Greene, 7.
tulipaformis n. sp., Hambach, 1.
turbinatus n. sp., Hambach, 1.
sp.?, Rowley, Greene, 7.
Pentremitidea (?) approximata n. sp., Rowley, Greene, 5.
? dubia n. sp., Rowley, Greene, 5.
leda ? var. magna n. var., Rowley, Greene, 5.
Peraceras superciliosus Cope, Osborn, 34.
Peratherium titanelix n. sp., Matthew (W. D.), 9.
Pericyclus Mojsisovics, Smith (J. P.), 3.
blairi Miller and Gurley, Smith (J. P.), 3.
? princeps de Koninck, Smith (J. P.), 3.
Periploma Schumacher, Arnold, 2.
Periploma Schumacher, Dall, 8.
angulifera Philippi, Dall, 8.
argentaria Conrad, Arnold, 2.
collardi Harris, Dall, 8.
peralta Conrad, Dall, 8.
peralta Conrad, Glenn, 6.
Peripristis semicircularis (Newb. & W.), Eastman, 5, 10.
Perischodomus M'Coy, Klem, 1.
illinoiensis Worthen and Miller, Klem, 1.
Perisphinctes aguilerai n. sp., Cragin, 2.
clarki n. sp., Cragin, 2.
felixi Castillo and Aguilera, Cragin, 2.
potosinus Castillo and Aguilera, Cragin, 2.
schucherti n. sp., Cragin, 2.
sp. cf. panderi d'Orbigny, Madsen, 1.
Perissolax tricarnatus n. sp., Weaver, 1.
Pernopecten cooperensis (Shumard), Weller, 2.
Peromyscus parvus n. sp., Sinclair, 6.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Peronopora millerl n. sp., Nickles, 6.
    - vera Ulrich, Nickles, 6.
  - Petalodus Owen, Eastman, 10.
    - alleghaniensis Leidy, Eastman, 10.
    - (Chomatodus) arcuatus (St. John) Eastman, 10.
  - Petigopora Ulrich, Ulrich and Bassler, 2.
    - offula n. sp., Ulrich and Bassler, 2.
  - Petraia Münster, Lambe, 2.
    - aperta Billings, Lambe, 2.
    - profunda Conrad (sp.), Lambe, 2.
    - pygmæa Billings, Lambe, 2.
  - Petricola Lamarck, Arnold, 2.
    - calvertensis Dall, Glenn, 6.
    - carditoides Conrad, Arnold, 2.
    - Petricolaria) cognata C. B. Adams, Arnold, 2.
    - (Petricolaria) denticulata Sowerby, Arnold, 2.
    - harrisii Dall, Glenn, 6.
    - (Rupellaria) lamellifera Conrad, Arnold, 2.
  - Petricolaria Stoliczka, Arnold, 2.
  - Phacodiscus calvertensis n. sp., Martin, 8.
  - Phacoides Blainville, Dall, 8.
    - section Bellucina Dall, Dall, 8.
    - section Epilucina Dall, Dall, 8.
    - section Gradilucina Cossmann, Dall, 8.
    - section Parvilucina Dall, Dall, 8.
    - section Pleurolucina Dall, Dall, 8.
    - section Cavilucina Fisher, Dall, 8.
    - (Bellucina) actinus n. sp., Dall, 8.
    - (Lucinoma) acutilineatus Conrad, Dall, 8.
    - (Pleurolucina) amabilis Dall, Dall, 8.
    - (Bellucina) amiantus Dall, Dall, 8.
    - (Lucinoma) annulatus Reeve, Dall, 8.
    - (Pseudomiltha) anodonta Say, Dall, 8.
    - (Pseudomiltha) anodonta. Say, Glenn, 6.
    - (Lucinisca) calhounensis n. sp., Dall, 8.
    - (Miltha) caloosaensis Dall, Dall, 8.
    - (Miltha) chipolanus n. sp., Dall, 8.
    - (Miltha) claibornensis Conrad, Dall, 8.
    - (Lucinoma) contractus (Say), Glenn, 6.
    - (Parvilucina) crenulatus Conrad, Dall, 8.
    - (Parvilucina) crenulatus (Conrad), Glenn, 6.
    - (Lucinisca) cribrarius (Say), Glenn, 6.
    - (Lucinisca) cribrarius Say, Dall, 8.
    - (Here) densatus Conrad, Dall, 8.
  - Phacoides (Miltha) disciformis Heilprin, Dall, 8.
    - domingensis n. sp., Dall, 8.
    - (Pseudomiltha) floridanus Conrad, Dall, 8.
    - (Pseudomiltha) foremani (Conrad), Glenn, 6.
    - (Pseudomiltha) foremani Conrad, Dall, 8.
    - (Here) glenni n. sp., Dall, 8.
    - (Here) hamatus n. sp., Dall, 8.
    - (Miltha) heracleus n. sp., Dall, 8.
    - (Miltha) hillsboroensis Heilprin, Dall, 8.
    - (Parvilucina) intensus n. sp., Dall, 8.
    - (Parvilucina) multilineatus Tuomey and Holmes, Dall, 8.
    - (Lucinisca) muricatus Spengler, Dall, 8.
    - nasulla var. caloosana Dall, Dall, 8.
    - (Miltha) ocalanus n. sp., Dall, 8.
    - (Parvilucina) piluliformis n. sp., Dall, 8.
    - (Lucinisca) plesiolophus Dall, Dall, 8.
    - (Here) podagrinus n. sp., Dall, 8.
    - (Parvilucina) prunus Dall, Glenn, 6.
    - (Parvilucina) prunus n. sp., Dall, 8.
    - (Pleurolucina) quadricostatus n. sp., Dall, 8.
    - (Cavilucina) recurrens n. sp., Dall, 8.
    - (Here) richthofeni Gabb, Dall, 8.
    - (Parvilucina) sphæriolus n. sp., Dall, 8.
    - (Here) tithonis n. sp., Dall, 8.
    - (Here) trisulcatus (Conrad), Glenn, 6.
    - trisulcatus var multistriatus Conrad, Dall, 8.
    - (Bellucina) tuomeyi n. sp., Dall, 8.
    - (Bellucina) waccamawensis n. sp., Dall, 8.
    - (Here) wacissanus n. sp., Dall, 8.
    - (Parvilucina) yaquensis Gabb, Dall, 8.
    - ? sp., Dall, 10.
    - (Here) sp. undet., Dall, 8.
  - Phacops cristata Hall, Kindle, 1.
    - cristata var. pipa H. and C., Kindle, 1.
    - logani Hall, Weller, 6.
    - cf. pulchellus Foerste, Kindle and Breger, 1.
    - rana (Green), Kindle, 1.
    - rana (Green), Weller, 6.
    - ? sp. undet., Weller, 6.
  - Phandella n. gen., Casey, 4.
    - nepionica n. sp., Casey, 4.
  - Phanerotinus paradoxus Win., Weller, 2.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Phanerotrema cf. grayvillense Norwood and Pratten, Girty, 3.
    - sp., Girty, 3.
  - Phaneta? decorata n. sp., Whiteaves, 12.
  - Phaseolites manhassettensis n. sp., Hollick, 11.
  - Phasianella Lamarck, Arnold, 2.
    - compta Gould, Arnold, 2.
  - Phenacodus primævus Cope, Osborn, 36.
  - Phenacomya petrosa (Conrad), Clark and Martin, 2.
  - Phialocrinus magnificus (Miller and Gurley), Beede, 1.
  - Philippina Dall, Dall, 8.
  - Phillipsastræa d'Orbigny, Lambe, 2.
    - billingsi Calvin, Lambe, 2.
    - verneuili Milne-Edwards and Haime, Lambe, 2.
    - verrilli Meek (sp.), Lambe, 2.
    - verrilli var. exiguum, n. var., Lambe, 2.
  - Phillipsia major Shumard, Girty, 3.
    - peroccidens Hall and Whitfield, Girty, 3.
    - trinucleata Herrick, Girty, 3.
  - Philonthus claudus n. sp., Scudder, 1.
  - Phlaocyon leucosteus Matthew, Matthew (W. D.), 2.
  - Phœbodus dens-neptuni n. sp., Eastman, 10.
    - knightianus n. sp., Eastman, 10.
  - Phænopora keewatinensis n. sp., Whiteaves, 17.
  - Phœnicopsis? sp., Fontaine, 1.
  - Phlœosinus squalidens Scudd., Hopkins (A. D.), 1.
  - Pholadidea Goodall, Arnold, 2.
    - (Penitella) penita Conrad, Arnold, 2.
  - Pholadomya anaiina n. sp., Anderson; 3.
    - angustata Sowerby sp., Madsen, 1.
    - clabornensis Meyer and Aldrich, Dall, 8.
    - marcoui n. sp., Cragin, 2.
    - marylandica Conrad, Clark and Martin, 2.
    - marylandica Conrad, Dall, 8.
    - nasuta Gabb, Weaver, 1.
    - paucicosta Roemer?, Cragin, 2.
    - præposita n. sp., Cragin, 2.
    - roemeri n. sp., Shattuck, 8.
    - tosta (Cragin), Cragin, 2.
  - Pholas (Thovana) producta Conrad, Glenn, 6.
  - Pholidocidaris Meek and Worthen, Klem, 1.
    - irregularis Meek and Worthen, Klem, 1.
  - Pholidops Hall, Grabau, 1.
    - arenaria Hall?, Weller, 6.
    - hamiltoniæ Hall, Raymond (P. E.), 4.
    - oblata Hall, Raymond (P. E.), 4.
    - ovata Hall, Weller, 6.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Pholidops squamiformis Hall, Grabau, 1.
    - sp., Kindle, 1.
  - Pholidostrophia iowensis (Owen), Kindle, 1.
    - iowaensis Owen, Raymond (P. E.), 3, 4.
    - niagarensis n. sp., Kindle and Breger, 1.
  - Phorcus Risso, Arnold, 2.
    - pulligo Martyn, Arnold, 2.
  - Phos falsus n. sp., Casey, 4.
    - macilentus n. sp., Casey, 4.
  - Phragmites (?) cliffwoodensis n. sp., Berry, 5.
  - Phragmoceras angustum Newell, Kindle and Breger, 1.
    - cf. ellipticum H. & W., Kindle and Breger, 1.
    - lineolatum n. sp., Whiteaves, 17.
    - parvum Hall and Whitfield, Kindle and Breger, 1.
    - parvum Hall and Whitfield, Clarke and Ruedemann, 1.
  - Phragmolites compressus Con., Weller, 6.
  - Phragmostoma Hall, Clarke, 19.
    - chautauquæ n. sp., Clarke, 19.
    - incisum Clarke, Clarke, 19.
    - natator Hall, Clarke, 19.
    - cf. triliratum Hall (sp.), Clarke 19.
  - Phyllites bifurcies n. sp., Knowlton, 14.
    - cliffwoodensis n. sp., Berry, 5.
    - denticulatus n. sp., Knowlton, 18.
    - inexpectans n. sp., Knowlton, 14.
    - intricata n. sp., Knowlton, 18.
    - oregonianus n. sp., Knowlton, 14.
    - personatus n. sp., Knowlton, 14.
    - saundersi n. sp., Knowlton, 16.
    - sp., Knowlton, 14.
  - Phylloceras ramosum Meek, Whiteaves, 12.
    - shastalense n. sp., Anderson, 3.
    - subobtusiforme n. sp., Pompeckj, 1.
  - Phyllodus Agassiz, Eastman, 1.
    - hipparionyx n. sp., Eastman, 1.
  - Phyllograptus Hall, Ruedemann, 8.
    - angustifolius Hall, Ruedemann, 8.
    - anna Hall, Ruedemann, 8.
    - ilicifolius Hall, Ruedemann, 8.
    - typus Hall, Ruedemann, 8.
  - Phylloporina Ulrich, Grabau, 1.
    - asperato-striata (Hall), Grabau, 1.
    - corticosa Ulr., Sardeson, 4.
    - fenestrata (Hall), Weller, 6.
  - Phymesoda Rafinesque, Dall, 8.
  - Physa Draparnaud, Letson, 1.
  - Physa Draparnaud, Arnold, 2.
    - heterostropha Say, Arnold, 2.
    - heterostropha Say, Letson, 1.
    - humerosa Gould, Springer (A.), 1.
  - Physonemus arcuatus McCoy, Eastman, 10.
    - asper nom. nov., Eastman, 10.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Physonemus gemmatus (Newberry and Worthen), Eastman, 10.
    - hamus-piscatorius n. sp., Eastman, 10.
    - pandatus n. sp., Eastman, 10.
    - stellatus (Newberry and Worthen), Eastman, 10.
  - Picea harrimani n. sp., Knowlton, 16.
  - Pieris scrobiculata n. sp., Hollick, 10.
  - Piloceras corniculum n. sp., Sardeson, 2.
    - explanator Whitfield, Ruedemann, 9.
  - Pinacoceratidæ, Hyatt and Smith, 1.
  - Pinacoceratoidea, Hyatt and Smith, 1.
  - Pinites leei n. sp., Fontaine, 5.
  - Pinna lata n. sp., Beede, 4.
    - peracuta Shumard, Beede, 1.
    - quadrifrons n. sp., Cragin, 2.
    - subspatulata Worthen, Beede, 1.
    - sp., Shattuck, 8.
  - Pinnas (?) coprolitiformis n. sp., Beede, 2.
  - Pinnatopora Vine, Condra, 2.
    - trilineata (Meek), Condra, 2.
    - pyriformipora Rogers, Condra, 2.
    - youngi Ulrich, Condra, 2.
  - Pinnipedia, Matthew (W. D.), 19.
  - Pinnopsis Hall, Clarke, 19.
  - Pinus L., Perkins, 13.
    - andræi Coem.?, Berry, 6.
    - conoides n. sp., Perkins, 13.
    - cuneatus n. sp., Perkins, 13.
    - delicatulus n. sp., Berry, 7.
    - lindgrenii n. sp., Knowlton, 4, 8.
    - mattewanensis n. sp., Berry, 4.
    - nordenskiöldi Heer, Fontaine, 1.
    - schista Ward n. sp., Fontaine, 5.
    - shastensis n. sp., Fontaine, 3.
    - vernonensis Ward n. sp., Fontaine, 5.
    - ? sp., Knowlton, 16.
  - Piptomerus Cope, Williston, 14.
  - Piratosaurus Leidy, Williston, 14.
  - Pisania Bivona, Arnold, 2.
    - fortis Carpenter, Arnold, 2.
    - (Celatoconus) protractus (Conrad), Martin, 5.
  - Pisidium C. Pfeiffer, Dall, 8.
  - Pisidium Pfeiffer, Letson, 1.
    - abditum Hald, Letson, 1.
    - compressum Prime, Letson, 1.
    - scutellatum Sterki, Letson, 1.
    - ultramontanum Prime, Letson, 1.
    - virginicum (Gmelin) Bourg., Letson, 1.
  - Pisocrinus glabellus n. sp., Rowley, 3.
    - globosus? Ringueberg, Rowley, 3.
    - gorbyi ? S. A. Miller, Rowley, 3.
    - granulosus n. sp., Rowley, 3.
  - Pitaria Roemer (em.), Dall, 8.
    - section Hyphantosoma Dall, Dall, 8.
    - section Lamelliconcha Dall, Dall, 8.
    - section Pitaria s. s., Dall, 8.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Pitaria section Tivelina Cossman, Dall, 8.
    - (Lamelliconcha) astartiformis Conrad, Dall, 8.
    - (Lamelliconcha) calcanea n. sp., Dall, 8.
    - (Hyphantosoma) carbasea Guppy, Dall, 8.
    - (Lamelliconcha) filosina n. sp., Dall, 8.
    - (Hyphantosoma) floridana n. sp., Dall, 8.
    - (Lamelliconcha) hilli n. sp., Dall, 8.
    - (Hyphantosoma) opisthogrammata n. sp., Dall, 8.
  - Pityoxylon chasense n. sp., Penhallow, 1.
    - microporosum brandonianum n. var., Knowlton, 11.
  - Placerias n. gen., Lucas, 19.
    - hesternus n. sp., Lucas, 19.
  - Placenticeras Meek, Hyatt, 1.
    - californicum n. sp., Anderson, 3.
    - ? fallax Castillo and Aguilera, Hyatt, 1.
    - guadalupæ (Roemer), Hyatt, 1.
    - intercalare Meek, Hyatt, 1.
    - ? intermedium n. sp., Johnson (D. W.), 5.
    - newberryi n. sp., Hyatt, 1.
    - pacificum Smith, Anderson, 3.
    - placenta De Kay, Lasswitz, 1.
    - planum n. sp., Hyatt, 1.
    - placenta (Dekay), Hyatt, 1.
    - placenta Dekay (sp.)?, Johnson (D. W.), 5.
    - ? rotundatum n. sp., Johnson (D. W.), 5.
    - pseudoplacenta, Hyatt, 1.
    - pseudoplacenta var. occidentale, Hyatt, 1.
    - sancarlosense n. sp., Hyatt, 1.
    - sancarlosense var. pseudosyrtale, Hyatt, 1.
    - spillmani n. sp., Hyatt, 1.
    - stantoni n. sp., Hyatt, 1.
    - stantoni var. bolli, Hyatt, 1.
    - whitfieldi n. sp., Hyatt, 1.
    - whitfieldi var. tuberculatum, Hyatt, 1.
    - syrtale (Morton), Hyatt, 1.
    - syrtale var. halei, Hyatt, 1.
    - ? sp. undet., Johnson (D. W.), 5.
  - Placites Mojsisovics, Hyatt and Smith, 1.
    - humboldtensis n. sp., Hyatt and Smith, 1.
  - Placunopsis carbonaria Meek and Worthen, Beede, 1.
  - Plæsiomys strophomenoides n. sp., Raymond (P. E.), 7.
  - Plagioctenium Dall, Arnold, 2.
  - Plagiolophus vancouverensis Woodward, Whiteaves, 12.

Paleontology—Continued.
Genera and species described—Continued.
Planorbis Guettard, Arnold, 2.
Planorbis Guettard, Letson, 1.
bicarinatus Say, Letson, 1.
parvus Say, Letson, 1.
tumidus Pfeiffer, Arnold, 2.
vermicularis Gould, Arnold, 2.
Planorbulina, d'Orbigny, Bagg, 6.
elegans, Guppy, 4.
mediterranensis d'Orbigny, Bagg, 6.
Plantaginopsis n. gen., Fontaine, 5.
marylandica n. sp., Fontaine, 5.
Platacodon nanus Marsh, Hatcher, 3.
Platanus aceroides? (Göppert) Heer, Knowlton, 14.
condoni (Newb.) Knowlton, Knowlton, 14.
nobilis? Newb., Knowlton, 14.
Platecarpus, Sternberg, 5.
Platidia marylandica n. sp., Clark and Martin, 3.
marylandica Clark, Dall, 8.
Platigonus Le Conte, Matthew and Gidley, 1.
Platyceras Conrad, Girty, 3.
Platyceras Conrad, Grabau, 1.
angulatum (Hall), Grabau, 1.
ammon Hall, Kindle, 1.
? arctiostoma Ulrich, Kindle, 1.
arkonense n. sp., Shimer and Grabau, 1.
blatchleyi n. sp., Kindle, 1.
bucculentum Hall, Kindle, 1.
bucculentum Hall, Shimer and Grabau, 1.
carinatum Hall, Kindle, 1.
circularis n. sp. (Rowley), Greene, 2.
? columbiana n. sp., Weller, 6.
compactum n. sp., Whiteaves, 17.
compressum Nettleroth, Kindle, 1.
compressum var., Kindle, 1.
conicum Hall, Kindle, 1.
(Diaphorostoma) cornutum Hisinger, Kindle and Breger, 1.
crassum Hall ?, Kindle, 1.
cymbula n. sp., Matthew (G. F.), 1.
dumosum Conrad, Kindle, 1.
dumosum var. pileum n. var., Kindle, 1.
dumosum var. rarispinum Hall, Kindle, 1.
echinatum Hall, Kindle, 1.
(Orthonychia) fluctuosum Ulrich, Kindle, 1.
fornicatum, Kindle, 1.
gibbosum Hall, Weller, 6.
linerare n. sp., Kindle, 1.
milleri Nettleroth, Kindle, 1.
multispinosum Meek, Kindle, 1.
niagarense (Hall), Grabau, 1.
parallum White and Whitfield?, Girty, 3.
parvum Swallow, Girty, 3.
radiatum n. sp., Matthew (G. F.), 1.

Paleontology—Continued.
Genera and species described—Continued.
Platyceras rictum Hall, Kindle, 1.
rictum var. spinosa n. var., Kindle, 1.
subcirculare n. sp., Kindle, 1.
subspinosum Hall, Shimer and Grabau, 1.
symmetricum Hall, Kindle, 1.
thetis Hall, Shimer and Grabau, 1.
thetis Hall, Kindle, 1.
tortuosum Hall, Weller, 6.
transversum n. sp., Matthew (G. F.), 1.
ventricosum Conrad, Kindle, 1.
vetulum n. sp., Sardeson, 1.
sp., Kindle, 1.
sp. undet., Weller, 6.
Platycrinus devonicus n. sp., Rowley, Greene, 7.
hemisphericus, Grabau, 8.
huntsvillæ (Troost), Grabau, 8.
huntsvillæ, Ulrich, 8.
Platygyra Ehrenberg 1834, Vaughan, 2.
clivosa (Ellis and Solander), Vaughan, 2.
viridis (Le Seur), Vaughan, 2.
Platygonus bicalaratus Cope, Gidley, 3.
compressus Le Conte, Wagner, 1.
texanus n. sp., Gidley, 3.
? sp., Sinclair, 7.
Platymetopus minganensis Billings, Raymond (P. E.), 5.
trentonensis (Con.), Weller, 6.
Platynus exterminatus n. sp., Scudder, 1.
interglacialis n. sp., Scudder, 1.
interitus n. sp., Scudder, 1.
longævus n. sp., Scudder, 1.
Platyodon Conrad, Arnold, 2.
cancellatus Conrad, Arnold, 2.
Platyostoma desmatum (Clarke), Weller, 6.
lineata Conrad, Parks, 5.
lineata Conrad, Kindle, 1.
lineatum var. callosum Hall, Kindle, 1.
nearpassi n. sp., Weller, 6.
niagarense Hall, Rowley, Greene, 2.
pleurotoma Hall, Kindle, 1.
turbinata Hall, Kindle, 1.
turbinata var. cochleata, Kindle, 1.
ventricosa Con., Weller, 6.
sp., Kindle, 1.
Platyphyllum brownianum Dn., White (D.), 18.
Platysomus circularis Newberry and Worthen, Eastman, 10.
Platystrophia biforata Schlotheim sp., Ruedemann, 2.
biforata, Cumings, 8.
biperforata (Schl.), Weller, 6.
costata, Cumings, 8.
laticosta, Cumings, 8.
lynx, Cumings, 8.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Platystrophia lynx von Buch, Hayes and Ulrich, 1.
    - lynx, Cumings and Mauck, 1.
  - Platypterygium densinerve Fontaine?, Fontaine, 5.
  - Platypterna E. Hitchcock, Lull, 2.
    - concamerata (E. Hitchcock), Lull, 2.
    - deaniana E. Hitchcock, Lull, 2.
    - delicatula (E. Hitchcock), Lull, 2.
    - digitigrada E. Hitchcock, Lull, 2.
    - gracillima E. Hitchcock, Lull, 2.
    - recta (E. Hitchcock), Lull, 2.
    - tenuis E. Hitchcock, Lull, 2.
  - Platytrochus speciosus Gabb and Horn, Vaughan, 15.
  - Platyxystrodus occidentalis (St. John), Eastman, 10.
  - Plectambonites Pander, Grabau, 1.
    - pisum n. sp., Ruedemann, 2.
    - sericea (Sowerby), Grabau, 1.
    - sericeus (Sowerby), Weller, 6.
    - cf. sericeus Sowerby, Kindle and Breger, 1.
    - sericeus Sowerby var. asper James, Ruedemann, 2.
    - transversalis (Wahlenberg), Grabau, 1.
  - Plectodon Carpenter, Dall, 8.
  - Plectorthis Hall and Clarke, subg. of Orthis, Walcott, 12.
    - ? atava Matthew, Walcott, 12.
    - christianiæ Kjerulf, Walcott, 12.
    - daunus n. sp., Walcott, 12.
    - desmopleura Meek, Walcott, 12.
    - desmopleura nympha n. var., Walcott, 12.
    - diablo n. sp., Walcott, 12.
    - doris n. sp., Walcott, 12.
    - hastingsensis n. sp., Walcott, 12.
    - iddingsi n. sp., Walcott, 12.
    - indianola n. sp., Walcott, 12.
    - johannensis Matthew, Walcott, 12.
    - kayseri n. sp., Walcott, 12.
    - linnarssoni Kayser, Walcott, 12.
    - newtonensis Weller, Walcott, 12.
    - pagoda n. sp., Walcott, 12.
    - papias n. sp., Walcott, 12.
    - plicatella Hall, Raymond (P. E.), 1.
    - plicatella (Hall), Weller, 6.
    - remnicha Winchell, Walcott, 12.
    - remnicha sulcata n. var., Walcott, 12.
    - remnicha texana n. var., Walcott, 12.
    - remnicha winfieldensis n. var., Walcott, 12.
    - retroflexa Matthew, Walcott, 12.
    - saltensis Kayser, Walcott, 12.
    - tullbergi n. sp., Walcott, 12.
    - wichitaensis n. sp., Walcott, 12.
    - wichitaensis læviusculus n. var., Walcott, 12.
    - wimani n. sp., Walcott, 12.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Plectorthis 2 sp.?, Walcott, 12.
  - Plesiastarte Fischer, Dall, 8.
  - Plesiornis E. Hitchcock, Lull, 2.
    - mirabilis E. Hitchcock, Lull, 2.
    - pilulatus E. Hitchcock, Lull, 2.
  - Plesiosaurus gouldii Williston, Williston, 14.
  - Plethomytilus cuneatus n. sp., Kindle and Breger, 1.
  - Plethospira socialis Girty?, Kindle, 1.
  - Pleuracanthus (Diplodus) compressus Newberry, Eastman, 10.
  - Pleuristion brachycœlus n. gen. and sp., Case, 3.
  - Pleuroceras Rafinesque, Letson, 1.
    - subulare Lea, Letson, 1.
  - Pleurocœlus, Lucas, 20.
  - Pleurodictyum lenticulare, Beecher, 1.
  - Pleurofusia De Greg., Casey, 5.
  - Pleuroliria De Greg., Casey, 5.
    - albida Perry, Casey, 5.
    - barretti Guppy, Casey, 5.
    - cochlearis Con., Casey, 5.
    - crenulosa n. sp., Casey, 5.
    - jacksonella n. sp., Casey, 5.
    - simplex n. sp., Casey, 5.
    - subsimilis n. sp., Casey, 5.
  - Pleurolucina Dall, Dall, 8.
  - Pleuromeris Conrad, Dall, 8.
  - Pleuromya inconstans Castillo and Aguilera, Cragin, 2.
    - inconstans var. curta n. var., Cragin, 2.
    - ? sp., Madsen, 1.
  - Pleuronotus decewi (Billings), Kindle, 1.
  - Pleuropachydiscus hoffmannii (Gabb), var., Whiteaves, 12.
  - Pleurophorella n. gen., Girty, 5.
    - papillosa n. sp., Girty, 5.
  - Pleurophorus angulatus Meek and Worthen?, Girty, 3.
    - costatus (Brown), Beede, 1.
    - occidentalis Meek and Hayden?, Girty, 3.
    - subcostatus Meek and Worthen, Beede, 1.
    - subcostatus Meek and Worthen, Girty, 3.
    - tropidophorus Meek, Beede, 1.
    - whitei n. sp., Beede, 4.
    - sp., Beede, 8.
  - Pleurotoma Lamarck, Arnold, 2.
    - (Hemipleurotoma) albida Perry, Martin, 5.
    - amica n. sp., Casey, 4.
    - ancilla n. sp., Casey, 4.
    - (Borsonia) bartschi n. sp., Arnold, 2.
    - (Hemipleurotoma) bellacrenata Conrad, Martin, 5.
    - (Hemipleurotoma) calvertensis n. sp., Martin, 5.
    - (Dolichotoma) carpenteriana Gabb, Arnold, 2.

Paleontology—Continued.
Genera and species described—Continued.
Pleurotoma (Drillia) caseyi n. sp., Aldrich, 2.
(Hemipleurotoma) choptankensis n. sp., Martin, 5.
(Hemipleurotoma) childreni Lea, Clark and Martin, 2.
collaris n. sp., Casey, 4.
(Hemipleurotoma) communis Conrad, Martin, 5.
(Hemipleurotoma) communis var. protocommunis n. var., Martin, 5.
(Dichotoma) cooperi n. sp., Arnold, 2.
(Borsonia) dalli n. sp., Arnold, 2.
ducateli n. sp., Clark and Martin, 2.
(Clathurella) dumblei n. sp., Anderson, 7.
evanescens n. sp., Casey, 4.
harrisi Clark, Clark and Martin, 2.
hilgardi n. sp., Casey, 4.
(Borsonia) hooveri n. sp., Arnold, 2.
intacta n. sp., Casey, 4.
oblivia n. sp., Casèy, 4.
(Leucosyrinx) pedroana n. sp., Arnold, 2.
perversa Gabb, Arnold, 2.
piscatavensis n. sp., Clark and Martin, 2.
plutonica n. sp., Casey, 4.
potomacensis n. sp., Clark and Martin, 2.
servata Conrad, Casey, 4.
(Spirotropsis) smithi n. sp., Arnold, 2.
(Dolichotoma) tryoniana, Gabb, Arnold, 2.
tysoni n. sp., Clark and Martin, 2.
vicksburgensis n. sp., Casey, 4.
Pleurotomaria De France, Grabau, 1.
adjutor Hall, Parks, 5.
aiens n. sp., Sardeson, 1.
? axion Hall, Kindle and Breger, 1.
capillaria Conrad cognata mut. nov., Clarke, 19.
capillaria Conrad, mut.. pygmæa nov., Loomis, 4.
? cf. carbonaria Norwood and Pratten, Girty, 3.
ciliata n. sp., Clarke, 19.
circumtrunca n. sp., Cragin, 2.
clivosa n. sp., Sardeson, 9.
delicatula var. camera n. var., Parks, 5.
eloroidea n. sp., Kindle and Breger, 1.
cf. eloroidea, Kindle and Breger, 1.
genundewa n. sp., Clarke, 19.
hoyi Hall, Kindle and Breger, 1.
hunterensis Cleland, Cleland, 3.
? idia Hall, Kindle and Breger, 1.
itylus n. sp., Clarke, 19.

Paleontology—Continued.
Genera and species described—Continued.
Pleurotomaria itys Hall, mut. pygmæa nov., Loomis, 4.
laphami Whitfield, Kindle and Breger, 1.
littorea Hall, Grabau, 1.
lucina Hall, Kindle, 1.
lucina var. perfasciata Hall, Kindle, 1.
pauper Hall, Kindle and Breger, 1.
pervetusta (Conrad), Grabau, 1.
procteri Nettleroth, Kindle, 1.
? quinquesulcata Win., Weller, 2.
stantoni n. sp., Shattuck, 8.
sulcomarginata Conrad, Kindle, 1.
sweeti Whitfield, Sardeson, 2.
? sp., Girty, 3.
sp., Kindle, 1.
? sp. undet., Weller, 2.
sp. undet., Kindle and Breger, 1.
(or Euomphalopterus) sp. indet., Whiteaves, 17.
Plicatula densata Conrad, Glenn, 6.
sportella n. sp., Cragin, 2.
Plinthiotheca angularis Lx. sp., White (D.), 10.
Pliohippus Marsh, Gidley, 5.
simplicidens Cope, Gidley, 1.
Pliomera Angelin, Raymond (P. E.), 6.
Pliomerops n. gen., Raymond (P. E.), 6.
canadensis, Raymond (P. E.), 6.
Poacites sp., Hollick, 11.
Poatrephes?, Douglass, 8.
paludicola n. gen. and sp., Douglass, 8.
Pododesmus Philippi, Arnold, 2.
(Monia) macroschisma Deshayes, Arnold, 2.
Podozamites angustifolius (Eichw.) Schimp., Hollick, 11.
distantinervis Fontaine, Fontaine, 2.
grandifolius Fontaine?, Fontaine, 2.
lanceolatus (Lindley and Hutton) Friedrich Braun non Emmons, Fontaine, 1.
lanceolatus latifolius (Friedrich Braun) Heer, Fontaine, 1.
lanceolatus minor (Schenk) Heer, Fontaine, 1, 2.
marginatus Heer, Berry, 5.
pachynervis n. sp., Fontaine, 1.
pachyphyllus n. sp., Fontaine, 1.
pedicellatus Fontaine, Fontaine, 5.
pulchellus Heer, Fontaine, 1.
sp.?, Hollick, 4.
Pœbrotherium, Matthew (W. D.), 15.
eximium, Matthew (W. D.), 15.
labiatum, Matthew (W. D.), 15.
wilsoni, Matthew (W. D.), 15.
Pœcilodus McCoy, Eastman, 10.
rugosus Newberry and Worthen, Eastman, 10.

Paleontology—Continued.

Genera and species described—Continued.

- Pœcilodus tribulis (St. John and Worthen), Eastman, 10.
- Pœcilozonites (Bld.), Gulick, 1.
  - bermudensis Pfr., Gulick, 1.
  - bermudensis var. zonatus Verrill, Gulick, 1.
  - circumfirmatus Redf., Gulick, 1.
  - circumfirmatus var. discrepans Prf., Gulick, 1.
  - cupula n. sp., Gulick, 1.
  - dalli n. sp., Gulick, 1.
  - nelsoni var. callosus n. var., Gulick, 1.
  - reinianus Pfr., Gulick, 1.
- Polemarchus E. Hitchcock, Lull, 2.
  - gigas E. Hitchcock, Lull, 2.
- Poleumita nom. nov., Clarke and Ruedemann, 1.
  - crenulata Whiteaves (sp.), Clarke and Ruedemann, 1.
  - scamnata n. sp., Clarke and Ruedemann, 1.
  - (?) sulcata Hall (sp.), Clarke and Ruedemann, 1.
- Polititapes Chiamenti, Dall, 8.
- Pollicipes siluricus n. sp., Ruedemann, 1.
- Polycyclus Mojsisovics, Hyatt and Smith, 1.
  - nodifer n. sp., Hyatt and Smith, 1.
- Polycotylus Cope, Williston, 14.
  - ischiadicus n. sp., Williston, 14.
  - latipinnis Cope, Williston, 14.
- Polygyra dalli Stearns (R. E. C.), 1.
- Polygyrata n. gen., Weller, 6.
  - sinistra n. sp., Weller, 6.
- Polymesoda Rafinesque, Dall, 8.
- Polymorpha gibba (d'Orbigny), Bagg, 6.
- Polymorphina d'Orbigny, Bagg, 6.
  - austriaca (d'Orbigny), Bagg, 1.
  - communis (d'Orbigny), Bagg, 1.
  - compressa d'Orbigny, Bagg, 1, 6.
  - compressa var. striata n. var., Bagg, 6.
  - elegantissima Parker and Jones, Bagg, 1, 6.
  - gibba (d'Orbigny), Bagg, 1.
  - lactea (Walker and Jacob), Bagg, 1, 6.
  - prælonga Terquem, Bagg, 1.
  - regina Brady, Parker, and Jones, Bagg, 6.
- Polynices Montfort, Arnold, 2.
  - (Neverita) duplicatus (Say) Martin, 5.
  - (Lunatia) homicryptus (Gabb), Martin, 5.
  - (Lunatia) heros (Say), Martin, 5.
  - (Lunatia) lewisii Gould, Arnold, 2.
  - (Neverita) recluziana Petit, Arnold, 2.
- Polyphemopsis louisvillæ Hall and Whitf., Kindle, 1.

Paleontology—Continued.

Genera and species described—Continued.

- Polypodium oregonense n. sp., Fontaine, 1.
- Polypora, Cumings, 9.
- Polypora McCoy, Grabau, 1.
- Polypora McCoy, Condra, 2.
  - bassleri n. sp., Condra, 1, 2.
  - cestriensis Ulrich, Ulrich, 2.
  - crassa Ulrich, Condra, 2.
  - cf. distincta Ulrich, Girty, 3.
  - elliptica Rogers, Condra, 2.
  - incepta Hall, Grabau, 1.
  - remota n. sp., Condra, 1, 2.
  - reversipora n. sp., Condra, 1, 2.
  - spinulifera Ulrich, Condra, 2.
  - stragula White, Condra, 2.
  - submarginata Meek, Condra, 2.
  - ulrichi n. sp., Condra, 1, 2.
  - varsoviensis Prout, Ulrich, 8.
  - n. sp., Girty, 3.
  - sp., Girty, 3.
- Polystichum hillsianum n. sp., Hollick, 5.
- Polystomella Lamarck, Bagg, 6.
  - crispa (Linné), Bagg, 9.
  - striatopunctata (Fichtel and Moll), Bagg, 6.
- Polythorax missouriensis Cope, Stanton and Hatcher, 1.
- Polytœchia Hall and Clarke, Walcott, 12.
  - ? montanensis n. sp., Walcott, 12.
- Pomatiopsis Tryon, Letson, 1.
  - lapidaria (Say) Tryon, Letson, 1.
- Pomaulax Gray, Arnold, 2.
  - undosus Wood, Arnold, 2.
- Pompholigina Dall, Dall, 8.
- Pontobdellopsis cometa n. gen. et sp., Ruedemann, 1.
- Pontoleon n. gen., True, 1.
  - magnus n. sp., True, 1.
- Popanoceras Hyatt, Hyatt and Smith, 1.
- Popanoceras Hyatt, Smith (J. P.), 3.
  - ganti n. sp., Smith (J. P.), 3.
  - (Parapopanoceras) haugi n. sp., Hyatt and Smith, 1.
  - parkeri Heilprin, Smith (J. P.), 3.
  - walcotti White, Smith (J. P.), 3.
- Popanoceratidæ Hyatt, Hyatt and Smith, 1.
- Populites amplus n. sp., Knowlton, 18.
  - tenuifolius n. sp., Berry, 5.
- Populophyllum menispermoides Ward n. sp., Fontaine, 5.
  - minutum Ward n. sp., Fontaine, 5.
- Populus auriculata Ward, Fontaine, 5.
  - cretacea n. sp., Knowlton, 18.
  - daphnogenoides Ward, Penhallow, 4.
  - lindgreni Knowlton, Knowlton, 14.
  - obtrita Dn., Penhallow, 4.
  - ? ricei n. sp., Fontaine, 3.
  - sp., Knowlton, 18.

Paleontology—Continued.

Genera and species described—Continued.

- Porites astreoides Lamarck, Vaughan, 2.
  - porites (Pallas), Vaughan, 2.
- Porodiscus concentricus (Ehrenberg), Martin, 8.
- Poromya jamaicensis n. sp., Dall, 8.
  - mississippiensis Meyer and Aldrich, Dall, 8.
- Porthochelys laticeps n. gen. et sp., Williston, 3.
  - browni n. sp., Hay, 24.
  - laticeps Williston, Hay, 24.
- Portlandia arctica Gray, Sears, 1.
- Portheus Cope, Loomis, 1.
  - molossus Cope, Osborn, 35.
  - mollosus, Sternberg, 5.
- Posidonia Bronn, Clarke, 19.
  - attica Williams (sp.), Clarke, 19.
  - mesacostalis Williams (sp.), Clarke, 19.
  - venusta Münster, var. nitidula n. var., Clarke, 19.
- Posidoniella pertenuis Beede?, Girty, 3.
- Posidonomya? pertenuis Beede, Beede, 1.
  - ? recurva Beede, Beede, 1.
- Potamides tenuis Gabb, Whiteaves, 12.
- Potamogetophyllum n. gen., Fontaine, 5.
  - vernonense n. sp., Fontaine, 5.
- Potamotherium E. Geoffroy, Matthew and Gidley, 1.
  - lacota n. sp., Matthew, Matthew and Gidley, 1.
- Poterioceras sauridens n. sp., Clarke and Ruedemann, 1.
  - sp., Clarke and Ruedemann, 1.
- Præcardium Barrande, Clarke, 19.
  - duplicatum Münster (sp.), Clarke, 19.
  - melletes n. sp., Clarke, 19.
  - multicostatum n. sp., Clarke, 19.
  - vetustum Hall, Clarke, 19.
- Prasopora? hospitalis (Nicholson), Nickles, 6.
  - patera n. sp., Ulrich and Bassler, 2.
  - patera Ulrich and Bassler, Hayes and Ulrich, 1.
  - simulatrix Ulrich, Weller, 6.
  - simulatrix Ulrich, Nickles, 6.
  - simulatrix Ulr., Sardeson, 3.
  - simulatrix var. orientalis Ulrich, Ruedemann, 2.
- Preptoceras sinclairi n. gen. and sp., Furlong, 2.
- Premnophyllum trigonum Vel., Hollick, 11.
- Prestwichia randalli n. sp., Beecher, 5.
  - signata n. sp., Beecher, 10.
- Priene H. & A. Adams, Arnold, 2.
- Primitia frostburgensis n. sp., Jones (T. R.), 4.
  - latimarginata n. sp., Raymond (P. E.), 7.

Paleontology—Continued.

Genera and species described—Continued.

- Primitia minuta? (Eichwald), Jones (T. R.), 4.
  - mundula var. jonesi n. var., Ruedemann, 2.
  - sp., Jones (T. R.), 4.
- Prionastræa vaughani, Gregory, Vaughan, 7.
- Prionoceras? Hyatt, Smith (J. P.), 3.
  - ? andrewsi Winchell, Smith (J. P.), 3.
  - ? brownense Miller, Smith (J. P.), 3.
  - ? ohioense Winchell, Smith (J. P.), 3.
- Prionocyclus macombi Meek, Johnson (D. W.), 5.
  - wyomingensis Meek, Johnson (D. W.), 5.
  - n. sp., Johnson (D. W.), 5.
- Prionolobus Waagen, Hyatt and Smith, 1.
- Prionotropis branneri n. sp., Anderson, 3.
  - woolgari Mantell (sp.), Johnson (D. W.), 5.
- Priscodelphinus? crassangulum n. sp., Case, 9.
  - gabbi Cope, Case, 9.
  - grandævus Leidy, Case, 9.
  - lacertosus Cope, Case, 9.
  - ruschenbergeri Cope, Case, 9.
  - uræus Cope, Case, 9.
- Prismatophyllum inæqualis (Hall), Weller, 6.
- Prismopora serrata Meek, Girty, 3.
  - triangulata White, Girty, 3.
  - sp., Girty, 3.
- Proamphicyon nebrascensis n. gen. and sp., Hatcher, 10.
- Proarcestes Mojsisovics, Hyatt and Smith, 1.
- Probaena n. gen., Hay, 8.
  - sculpta n. sp., Hay, 9.
- Procamelus, Matthew (W. D.), 15.
- Procamelus Leidy, Matthew (W. D.), 2.
  - fissidens Cope, Matthew (W. D.), 2.
  - lacustris n. sp., Douglass, 1.
  - madisonius n. sp., Douglass, 1.
  - robustus Leidy, Matthew (W. D.), 2.
- Prochasma Beushausen, Clarke, 19.
- Proclydonautilus Mojsisovics, Hyatt and Smith, 1.
- Proclydonautilus Mojsisovics, Smith (J. P.), 5.
  - triadicus Mojsisovics, Smith (J. P.), 5.
  - triadicus Mojsisovics, Hyatt and Smith, 1.
- Procyonidæ, Matthew (W. D.), 19.
- Prodophoenus Wortman and Matthew, Wortman, 2.
- Prodromites Smith and Weller, Smith (J. P.), 3.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Prodromites n. gen., Smith and Weller, 1.
    - gorbyi Miller, Smith and Weller, 1.
    - gorbyi Miller, Smith (J. P.), 3.
    - ornatus n. sp., Smith (J. P.), 3.
    - præmaturus Smith and Weller, Smith (J. P.), 3.
    - praematurus n. sp., Smith and Weller, 1.
  - Productella concentrica Hall, Girty, 3.
    - concentrica (Hall), Weller, 2.
    - minneapolis n. sp., Sardeson, 9.
    - semiglobosa Nettleroth, Kindle, 1.
    - spinulicosta Hall, Kindle, 1.
    - spinulicosta Hall, mut. pygmæa nov., Loomis, 4.
  - Productus Sowerby, Beede, 1.
    - arcuatus Hall, Weller, 2.
    - cora d'Orbigny, Beede, 1.
    - cora d'Orbigny, Girty, 3.
    - cora americanus Swallow, Beede, 1.
    - costatus Sowerby, Beede, 1.
    - gallatinensis Girty, Girty, 3.
    - inflatus McChesney, Girty, 3.
    - lævicosta White, Girty, 3.
    - longispinus Sowerby?, Beede, 1.
    - morrillianus Win., Weller, 2.
    - nebrascensis Owen, Beede, 1.
    - nebraskensis Owen, Girty, 3.
    - parvicostatus n. sp. (Rowley), Greene, 2.
    - parviformis Girty, Girty, 3.
    - parvulus Win., Weller, 2.
    - pertenuis Meek, Beede, 1.
    - pertenuis Meek?, Girty, 3.
    - portlockianus Norwood and Pratten, Girty, 3.
    - punctatus Martin, Weller, 2.
    - punctatus (Martin), Beede, 1.
    - punctatus Martin, Girty, 3.
    - cf. pustulosus Phillips, Girty, 3.
    - semireticulatus (Martin), Beede, 1.
    - semireticulatus var., Girty, 3.
    - semireticulatus var. hermosanus n. var., Girty, 3.
    - symmetricus McChesney, Beede, 1.
    - sp., Girty, 3.
  - Proetus brevimarginatus n. sp., Weller, 6.
    - canaliculatus Hall, Kindle, 1.
    - clarus Hall, Kindle, 1.
    - clelandi n. sp., Raymond (P. E.), 5.
    - corrugatus n. sp., Van Ingen, 2.
    - crassimarginatus Hall, Kindle, 1.
    - curvimarginatus Hall and Clarke, Kindle, 1.
    - ? depressus n. sp., Weller, 6.
    - folliceps Hall and Clarke, Kindle, 1.
    - latimarginatus Hall and Clarke, Kindle, 1.
    - latimarginatus n. sp., Weller, 6.
    - macrocephalus Hall, Kindle, 1.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Proetus microgemma Hall and Clarke, Kindle, 1.
    - pachydermatus Barrett, Weller, 6.
    - protuberans Hall, Weller, 6.
    - ? spinosa n. sp., Weller, 6.
    - subannulatus n. sp., Van Ingen, 2.
    - sp., Clarke and Ruedemann, 1.
    - sp., Parks, 5.
  - Profischeria Dall, Dall, 8.
  - Prolecanites Mojsisovics, Smith (J. P.), 3.
    - ? compactus Meek and Worthen, Smith (J. P.), 3.
    - greenii Miller, Smith (J. P.), 3.
    - gurleyi n. sp., Smith (J. P.), 3.
    - houghtoni Winchell, Smith (J. P.), 3.
    - ? louisianensis Rowley, Smith (J. P.), 3.
    - lyoni Meek and Worthen, Smith (J. P.), 3.
    - marshallensis Winchell, Smith (J. P.), 3.
  - Promacrus cuneatus Hall, Weller, 2.
  - Promerycochœrus minor n. sp., Douglass, 8.
  - Pronorites Mojsisovics, Smith (J. P.), 3.
    - cyclolobus Phillips, var. arkansasensis, Smith (J. P.), 3.
    - siebenthali n. sp., Smith (J. P.), 3.
  - Pronoritidæ, Hyatt and Smith, 1.
  - Propleura borealis n. sp., Wieland, 6.
  - Proptychites Waagen, Hyatt and Smith, 1.
    - walcotti n. sp., Hyatt and Smith, 1.
  - Proscalops n. gen., Matthew (W. D.), 2.
    - miocænus n. sp., Matthew (W. D.), 2.
  - Prosphingites Mojsisovics, Hyatt and Smith, 1.
    - austini n. sp., Hyatt and Smith, 1.
  - Prosthennops n. gen., Gidley, Matthew and Gidley, 1.
    - crassigenis n. sp., Gidley, Matthew and Gidley, 1.
  - Protapes Dall, Dall, 8.
  - Protapirus robustus n. sp., Sinclair, 1.
  - Proteæphyllum californicum n. sp., Fontaine, 3.
    - dentatum Fontaine, Fontaine, 5.
    - uhleri n. sp., Fontaine, 5.
  - Protemnocyon inflatus n. gen. and sp., Hatcher, 10.
  - Protengonoceras Hyatt, Hyatt, 1.
    - ? emarginatum (Cragin), Hyatt, 1.
    - gabbi (Böhm), Hyatt, 1.
    - planum n. sp., Hyatt, 1.
  - Proteoides daphnogenoides Heer, Berry, 5.
  - Proterix loomisi n. gen. and sp., Matthew (W. D.), 10.
  - Prothyris truncata n. sp., Cleland, 2.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Protocalyptræa Clarke, Clarke, 19.
      - marshalli Clarke, Clarke, 19.
      - styliophila Clarke, Clarke, 19.
    - Protocardia Beyrich, Arnold, 2.
      - centifilosa Carpenter, Arnold, 2.
      - lenis Conrad, Clark and Martin, 2.
      - salinaensis Meek, Jones (A. W.), 2.
    - Protoceras, Matthew (W. D.), 22.
    - Protohippus Leidy, Gidley, 5.
      - cumminsii (Cope), Gidley, 1.
      - phlegon (Hay), Gidley, 1.
    - Protolabis, Matthew (W. D.), 15.
    - Protolabis Cope, Matthew (W. D.), 2.
      - angustidens Cope, Matthew (W. D.), 2.
      - heterodontus Cope, Matthew (W. D.), 2.
      - montanus Douglass, Matthew (W. D.), 2.
      - montanus n. sp., Douglass, 1.
    - Protolenus, Matthew (G. F.), 27.
    - Protomeryx, Matthew (W. D.), 15.
      - hallii, Matthew (W. D.), 15.
    - Protophyllocladus n. gen., Berry, 3.
      - lanceolatus (Knowlton), Berry, 3.
      - polymorphus (Lesq.), Berry, 3.
      - subintegrifolius (Lesq.), Berry, 3.
      - subintegrifolius (Lesq.) Berry, Berry, 7.
    - Protopteris kellermaniana n. sp., Herzer, 4.
    - Protomeryx Leidy, Matthew (W. D.), 2.
      - campester n. sp., Matthew (W. D.), 2.
    - Protonympha salicifolia nov., Clarke, 18.
    - Protophragmoceras patronus n. sp., Clarke and Ruedemann, 1.
    - Protopora n. gen., Greene, 12.
    - Protorohippus venticolus, Osborn, 36.
    - Protorthis Hall and Clarke, Walcott, 12.
      - billingsi Hartt, Walcott, 12.
      - (Loperia) dougaldensis n. sp., Walcott, 12.
      - helena n. sp., Walcott, 12.
      - lævis n. sp., Walcott, 12.
      - latourensis Matthew, Walcott, 12.
      - nautes n. sp., Walcott, 12.
      - ? nunnebergensis n. sp., Walcott, 12.
      - quacoensis Matthew, Walcott, 12.
      - spencei n. sp., Walcott, 12.
      - wingi n. sp., Walcott, 12.
      - sp. und., Walcott, 12.
    - Protorosaurus v. Meyer, Osborn, 19.
    - Protosphyræna Leidy, Loomis, 1.
    - Protosphyræna Leidy, Stewart, 1.
      - bentoniana Stewart, Stewart, 1.
      - dimidiata (Cope), Hay, 10.
      - gigas Stewart, Stewart, 1.
      - gladius (Cope), Hay, 10.
      - nitida (Cope), Hay, 10.
      - nitida Cope, Loomis, 1.
- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Protosphyræna obliquidens n. sp., Loomis, 1.
      - penetrans Cope, Loomis, 1.
      - penetrans Cope, Stewart, 1.
      - perniciosa (Cope), Hay, 10.
      - recurvirostris Stewart, Stewart, 1.
      - sequax n. sp., Hay, 10.
      - tenuis n. sp., Loomis, 1.
      - tenuis Loomis, Hay, 10.
      - ziphioides (Cope), Hay, 10.
      - n. sp.?, Stewart, 1.
    - Protospirialis n. gen., Clarke, 19.
      - minutissima Clarke, Clarke, 19.
    - Protostega, Williston, 4.
      - gigas Cope, Sternberg, 5.
    - Protosurcula n. gen., Casey, 5.
      - gabbi Con., Casey, 5.
      - plenta H. & A., Casey, 5.
      - tenuirostris n. sp., Casey, 5.
    - Protothaca Dall, Dall, 8.
      - grewingkii n. sp., Dall, 10.
      - ? sp., Dall, 10.
    - Prototomus Cope, Matthew (W. D.), 20.
    - Protowarthia cancellata Hall sp., Ruedemann, 2.
      - cancellata (Hall), Weller, 6.
      - rossi n. sp., Collie, 3.
      - tenuissima n. sp., Collie, 3.
    - Protozyga exigua Hall, Ruedemann, 2.
    - Protrachyceras Mojsisovics, Hyatt and Smith, 1.
    - Protrachyceras Mojsisovics, Smith (J. P.), 5.
    - Prunoides n. gen., Perkins, 13.
      - bursæformis (Lx.), Perkins 13.
      - seelyi n. sp., Perkins, 13, 17.
    - Prunus? merriami n. sp., Knowlton, 14.
      - ? tufacea n. sp., Knowlton, 14.
    - Psammobia (Lamarck) Bowditch, Arnold, 2.
      - (Psammobia) edentula Gabb, Arnold, 2.
      - gubernatoria n. sp., Glenn, 6.
      - sp.?, Ravn, 1.
    - Psaronius, Herzer, 1.
      - junceus n. sp., Herzer, 2.
      - vermiculus n. sp., Herzer, 4.
    - Psephidia Dall, Dall, 8.
    - Psephis Carpenter, Arnold, 2.
      - salmonea Carpenter, Arnold, 2.
      - tantilla Carpenter, Arnold, 2.
    - Psephodus Agassiz, Branson, 1.
      - acutus n. sp., Branson, 1.
      - carbonarius n. sp., Branson, 1.
      - legrandensis n. sp., Branson, 1.
    - Pseudaspidoceras n. gen., Hyatt, 1.
    - Pseudauliscus spinosus (Christian), Boyer, 1.
    - Pseudobradypus n. gen., Matthew (G. F.), 21.
    - Pseudobradypus, Matthew (G. F.), 30.
      - unguifer Dawson, Matthew (G. F.), 25, 30.
    - Pseudocrinites Pearce, Schuchert, 11.
      - abnormalis n. sp., Schuchert, 11.

Paleontology—Continued.
Genera and species described—Continued.
Pseudocrinites clarki n. sp., Schuchert, 6.
  clarki Schuchert, Schuchert, 11.
  claypolei n. sp., Schuchert, 11.
  elongatus n. sp., Schuchert, 11.
  gordoni n. sp., Schuchert, 6, 11.
  perdewi n. sp., Schuchert, 6, 11.
  stellatus n. sp., Schuchert, 6, 11.
  subquadratus n. sp., Schuchert, 11.
Pseudocyrena Bourguignat, Dall, 8.
Pseudoliva sp., Clark and Martin, 2.
Pseudolabis, Matthew (W. D.), 15.
  dakotensis n. gen. and sp., Matthew (W. D.), 15.
  dakotensis, Matthew (W. D.), 15.
Pseudomelania goodellii n. sp., Cragin, 2.
Pseudomiltha Fischer, Dall, 8.
Pseudomonotis Beyrich, Smith (J. P.), 5.
  equistriata Beede, Girty, 3.
  hawni (Meek and Hayden), Beede, 1.
  hawni Meek and Hayden, Girty, 3.
  hawni equistriata Beede, Beede, 1.
  kansasensis Beede, Girty, 3.
  kansasensis nom. nov., Beede, 1.
  ? robusta Beede, Beede, 1.
  subcircularis Gabb, Smith (J. P.), 5.
  sp., Girty, 3.
Pseudoneæra Sturany, Dall, 8.
Pseudoniscus, Clarke (J. M.), 12.
  roosevelti n. sp., Clarke (J. M.), 12.
Pseudopterodon minutus (Douglas), Matthew (W. D.), 9.
Pseudosageceras Diener, Hyatt and Smith, 1.
  intermontanum n. sp., Hyatt and Smith, 1.
Pseudosphærexochus approximus n. sp., Raymond (P. E.), 5.
  chazyensis n. sp., Raymond (P. E.), 5.
  (Nieszkowskia) satyrus Billings, Raymond (P. E.), 5.
  trentonensis Clarke, Weller, 6.
  vulcanus Billings, Raymond (P. E.), 5.
  vulcanus var. billingsi n. var., Raymond (P. E.), 5.
Pseudothryptodus n. gen., Loomis, 1.
  intermedius n. sp., Loomis, 1.
Pseudotsuga miocena Penh., Penhallow, 5.
  miocena n. sp., Penhallow, 4.
Psilocochlis n. subg., Dall, 12.
  mccallie n. sp., Dall, 12.
Psilophyton ? alcicorne D. W., White (D.), 18.
  cf. princeps Dn., White (D.), 18.
Pteranodon Marsh, Eaton, 2.
Pteranodon (Ornithostoma), Williston, 7.

Paleontology—Continued.
Genera and species described—Continued.
Pteranodon Marsh, Eaton, 3.
  longiceps Marsh, Eaton, 3.
Ptereulima n. gen., Casey, 3.
  elegans n. sp., Casey, 3.
Pteria limula (Conrad), Clark and Martin, 2.
  longa (Geinitz), Beede, 1.
  sulcata (Geinitz), Beede, 1.
Pterinea Goldfuss, Grabau, 1.
  emacerata (Conrad), Grabau, 1.
  emacerata (Con.), Weller, 6.
  flabella (Con.), Weller, 6.
  flabella (Con.) Hall, Kindle, 1.
  grandis Hall, Kindle, 1.
Pterinopecten nodocostatus (W. and W.), Weller, 2.
  nodosus Hall, Kindle, 1.
  reflexus Hall, Kindle, 1.
  subplana Hall (sp.), Clarke and Ruedemann, 1.
  undata Hall (sp.), Clarke and Ruedemann, 1.
  undosus Hall, Kindle, 1.
  ? sp. undet., Weller, 6.
Pterinea sp. undet., Kindle and Breger, 1.
Pterochænia n. gen., Clarke, 19.
  cashaquæ n. sp., Clarke, 19.
  elmensis n. sp., Clarke, 19.
  fragilis Hall (sp.), Clarke, 19.
  fragilis Hall (sp.) var. orbicularis n. var., Clarke, 19.
  perissa n. sp., Clarke, 19.
  sinuosa n. sp., Clarke, 19.
Pteronotus Swainson, Arnold, 2.
Pteromeris Conrad, Dall, 8.
Pteronites? subplana (Hall), Weller, 6.
Pteropelyx grallipes Cope, Stanton and Hatcher, 1.
Pterophycus plicatus n. gen. and sp., Herzer, 4.
Pterophyllum æquale (Brongniart) Nathorst, Fontaine, 1.
  alaskense n. sp., Fontaine, 2.
  contiguum Schenk, Fontaine, 1.
  ? lowryanum Ward n. sp., Fontaine, 3.
  minus Brongniart?, Fontaine, 1.
  nathorsti Schenk, Fontaine, 1.
  rajmahalense Morris, Fontaine, 1.
Pterorhytis Conrad, Arnold, 2.
Pterospermites alaskana n. sp., Knowlton, 16.
  magnifolia n. sp., Knowlton, 16.
Pterostichus depletus n. sp., Scudder, 1.
Pterotheca expansa (Emm.) ?, Weller, 6.
  expansa Emmons, Raymond (P. E.), 1.
Pterotocrinus acutus Wetherby, Ulrich, 8.
  capitalis Lyon, Ulrich, 8.
  depressus Lyon and Casseday, Ulrich, 8.

Paleontology—Continued.

Genera and species described—Continued.

- Pterygometopus annulatus n. sp., Raymond (P. E.), 5.
  - callicephalus (Hall), Weller, 6.
  - eboraceus Schmidt, Ruedemann, 2.
  - intermedius (Walcott)?, Weller, 6.
- Pterygotus Agassiz, Grabau, 1.
  - cobbi Hall, Grabau, 1.
  - globicaudatus Pohlman, Grabau, 1.
  - macropthalmus Hall, Grabau, 1.
  - monroensis n. sp., Sarle, 2.
- Ptilodictya frondosa n. sp., Weller, 6.
  - lobata n. sp., Weller, 6.
  - (Escharopora) subrecta Ulr., Sardeson, 4.
  - ? sp.?, Sardeson, 1.
- Ptilodus primævus n. sp., Lambe, 3.
- Ptilograptus Hall, Ruedemann, 8.
  - geinitzianus Hall, Ruedemann, 8.
  - plumosus Hall, Ruedemann, 8.
  - tenuissimus n. sp., Ruedemann, 8.
- Ptilozamites leckenbyi (Bean) Nathorst, Fontaine, 1.
- Ptychites Mojsisovics, Hyatt and Smith, 1.
  - meeki n. sp., Hyatt and Smith, 1.
- Ptychitidæ Mojsisovics, Hyatt and Smith, 1.
- Ptychitinæ, Hyatt and Smith, 1.
- Ptychitoidea, Hyatt and Smith, 1.
- Ptychocladia n. gen., Ulrich and Bassler, 1.
  - agellus n. sp., Ulrich and Bassler, 1.
- Ptychodesma knappianum H. and W., Kindle, 1.
- Ptychodus, Williston, 1.
  - anonymus Williston, Williston, 1.
  - janewayii (Cope), Williston, 1.
  - martini Williston, Williston, 1.
  - mortoni (Mantell), Williston, 1.
  - occidentalis Leidy, Williston, 1.
  - polygyrus (Buckland), Williston, 1.
  - whippleyi Marcou, Williston, 1.
  - sp., Williston, 1.
- Ptycholepis Agassiz, Eastman, 20.
  - marshi Newberry, Eastman, 20.
- Ptychomya ragsdalei (Cragin), Shattuck, 8.
  - stantoni n. sp., Cragin, 2.
- Ptychoparia blairi n. sp., Weller, 6.
  - calcifera Walcott?, Weller, 6.
  - cordilleræ Walcott, Woodward (H.), 1.
  - newtonensis n. sp., Weller, 6.
  - sp. undet., Weller, 6.
  - ? subquadrata n. sp., Weller, 6.
- Ptychosalpinx altilis (Conrad), Martin, 5.
  - lienosa Conrad, Martin, 5.
  - multirugata Conrad, Martin, 5.
- Ptychopyge jerseyensis n. sp., Weller, 6.
- Ptychospira sexplicata (White and Whitfield), Greger, 1.
- Ptychoxylon levyi, White (D.), 19.

Paleontology—Continued.

Genera and species described—Continued.

- Puella sp., Clarke, 19.
- Puffinus conradi Marsh, Case, 9.
- Pugnax rockymontana (Marcou), Beede, 1.
  - striatocostata (M. and W.), Weller, 2.
  - utah (Marcou), Beede, 1.
  - utah Marcou, Girty, 3.
- Pullastra Sowerby, Dall, 8.
- Pullenia sphæroides (d'Orbigny), Bagg, 9.
- Pulvinulina auricula (Fichtel and Moll), Bagg, 9.
  - brongniartii (d'Orbigny), Bagg, 9.
  - elegans, Guppy, 4.
  - exigua var. obtusa Burrows, Bagg, 1.
  - schreibersii (d'Orbigny), Bagg, 1.
- Puncturella Lowe, Arnold, 2.
  - cucullata Gould, Arnold, 2.
  - galeata Gould, Arnold, 2.
- Purpura Bruguière, Arnold, 2.
  - crispata Chemnitz, Arnold, 2.
  - lima Martyn, Anderson, 7.
  - saxicola Valenciennes, Arnold, 2.
- Pygurus sp., Cragin, 2.
- Pycnostylus Whiteaves, Lambe, 2.
  - elegans Whiteaves, Lambe, 2.
  - guelphensis Whiteaves, Lambe, 2.
- Pyramidella Lamarck, Arnold, 2.
  - conica Adams, var. variegata Carpenter, Arnold, 2.
  - (Sulcorinella) dodona n. sp., Dall and Bartsch, 2.
- Pyramidula lecontei n. sp., Stearns (R. E. C.), 3.
- Pyramidula perspectiva simillima, Stearns (R. E. C.), 1.
  - shimekii (Pilsbry), Shimek, 3.
- Pyrazisinus harrisi n. sp., Maury, 1.
- Pyrgiscus Philippi, Arnold, 2.
- Pyrgisculus Monterosato, Arnold, 2.
- Pyrgolampros Sacco, Arnold, 2.
- Pyrula harrisi n. sp., Martin, 5.
  - penita var. Conrad, Clark and Martin, 2.
  - (?) sp., Clark and Martin, 2.
- Quadrula Rafinesque, Letson, 1.
  - coccinea (Conrad) Simpson, Letson, 1.
  - solida (Lea) Simpson, Letson, 1.
- Quebecia n. gen., Walcott, 12.
  - circe Billings, Walcott, 12.
- Quedius deperditus n. sp., Scudder, 1.
- Quercophyllum chinkapinense Ward n. sp., Fontaine, 5.
- Quercus affinis (Newb.), Knowlton, 14.
  - breweri Lesq., Knowlton, 14.
  - consimilis Newb., Knowlton, 14.
  - dayana n. sp., Knowlton, 14.
  - duriuscula n. sp., Knowlton, 14.
  - eoprinoides n. sp., Berry, 7.
  - hollickii n. sp., Berry, 5.
  - hollickii Berry, Berry, 7.
  - holmesii Lesq., Berry, 5.

Paleontology—Continued.
Genera and species described—Continued.
- Quercus horniana Lesq., Knowlton, 14.
  - judithæ n. sp., Knowlton, 18.
  - lehmanii n. sp., Hollick, 10.
  - merriami n. sp., Knowlton, 14.
  - montana n. sp., Knowlton, 18.
  - morrisoniana Lesq., Hollick, 11.
  - oregoniana n. sp., Knowlton, 14.
  - pseudo-lyrata Lesq., Knowlton, 14.
  - simplex Newb., Knowlton, 14.
  - ursina n. sp., Knowlton, 14.
  - ? sp., Knowlton, 14.
  - ? sp., Johnson (D. W.), 5.
- Radiocrista Dall, Dall, 8.
- Raeta Gray, Arnold, 2.
- Rafinesquina alternata (Emmons) Hall and Clarke, Ruedemann, 2.
  - alternata (Emm.), Weller, 6.
  - alternata var. ponderosa, Hayes and Ulrich, 1.
  - champlainensis n. sp., Raymond (P. E.), 1.
  - deltoidea Conrad var., Ruedemann, 2.
- Raja? dux Cope, Eastman, 18.
- Randomia n. gen., Matthew (G. F.), 1.
  - auroræ n. sp., Matthew (G. F.), 1.
- Ranella Lamarck, Arnold, 2.
  - californica Hinds, Arnold, 2.
- Raphistoma columbiana n. sp., Weller, 6.
  - leiosomellum n. sp., Sardeson, 2.
  - lenticulare Emmons, Raymond (P. E.), 1.
  - lewistonense n. sp., Sardeson, 2.
  - minnesotense Owen, Sardeson, 2.
  - oweni n. sp., Sardeson, 2.
  - peracutum U. & S., Weller, 6.
  - ruidum n. sp., Sardeson, 2.
- Raphoneis gemmifera Ehrenberg, Boyer, 1.
- Raufella? fucoida n. sp., Sardeson, 1.
- Receptaculites occidentalis Salter, Weller, 6.
- Remipleurides canadensis Billings, Raymond (P. E.), 5.
- Remondia Gabb, Dall, 8.
- Remopleurides tumidus n. sp., Ruedemann, 2.
  - (Caphyra) linguatus n. sp., Ruedemann, 2.
- Rensselaeria subglobosus n. sp., Weller, 6.
- Reophax scorpiurus, Guppy, 4.
- Reptoflustrella heteropora Gabb and Horn, Ulrich, 2.
- Reteocrinus onealli Hall, Springer (F.), 3.
- Reteograptus geinitzianus Hall, Weller, 6.
- Retepora doverensis n. sp., Ulrich and Bassler, 4.
- Reticularia bicostata (Vanuxem), Weller, 6.

Paleontology—Continued.
Genera and species described—Continued.
- Reticularia bicostata Vanuxem 1842, var. petila Hall, 1879, Beecher, 1.
  - cooperensis (Swallow), Weller, 2.
  - fimbriata (Con.), Weller, 6.
  - fimbriata (Conrad), Shimer, 5.
  - fimbriata (Conrad), Kindle, 1.
  - knappianum Nettleroth, Kindle, 1.
  - perplexa (McChesney), Beede, 1.
- Reticularia proxima n. sp., Kindle and Breger, 1.
  - septentrionalis n. sp., Whiteaves, 17.
  - wabashensis n. sp., Kindle, 1.
  - sp., Kindle and Breger, 1.
- Reticularia? sp. indet., Whiteaves, 17.
- Reticulipora dichotoma Gabb and Horn, Ulrich, 2.
- Retiograptus Hall, Ruedemann, 8.
  - tentaculatus Hall, Ruedemann, 8.
- Retiphycus hexagonale n. gen. and sp., Ulrich, 4.
- Retusa (Cylichnina) conulus (Deshayes), Martin, 5.
  - (Cylichnina) marylandica n. sp., Martin, 5.
  - (Cylichnina) subspissa (Conrad), Martin, 5.
- Rhabdoceras Hauer, Hyatt and Smith, 1.
  - russelli Hyatt, Hyatt and Smith, 1.
- Rhabdosteus latiradix Cope, Case, 9.
- Rhachiopteris punctata Dn. (?), White (D.), 18.
- Rhamnacinium porcupinianum n. sp., Penhallow, 5.
  - triseriatim n. sp., Penhallow, 5.
- Rhamnus novæ-cæsareæ, n. sp., Berry, 5.
- Rhamphorhynchus, Williston, 7.
- Rhaphanocrinus gemmeus n. sp., Hudson, 1.
- Rhineastes eruciferus Cope (sp.), Lambe, 3.
- Rhinellus tenuirostris (Cope), Hay, 10.
- Rhinidictya mutabilis Ulr., Sardeson, 4.
  - sp. undet., Weller, 6.
- Rhinoclama Dall and Smith, Dall, 8.
- Rhinoceros crassus Leidy, Osborn, 34.
  - hesperius Leidy, Osborn, 34.
  - longipes Leidy, Osborn, 34
  - meridianus Leidy, Osborn, 34.
  - proterus, Leidy, Osborn, 34.
- Rhinopora Hall, Grabau, 1.
  - tuberculosa Hall, Grabau, 1.
- Rhipidomella Oehlert, Grabau, 1.
  - burlingtonensis (Hall), Weller, 2.
  - circularis Hall (?), Kindle and Breger, 1.
  - circulus Hall, Grabau, 1.
  - eminens (Hall), Weller, 6.
  - goodwini Nettleroth, Kindle, 1.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Rhiphidomella hybrida Sowerby, Kindle and Breger, 1.
    - hybrida Sowerby, 1839, Beecher, 1.
    - hybrida (Sowerby), Grabau, 1.
    - leucosia Hall, Kindle, 1.
    - livia (Billings?), Kindle, 1.
    - sp. cf. musculosa (Hall), Weller, 6.
    - oblata (Hall), Weller, 6.
    - pecosi (Marcou), Beede, 1.
    - pecosi Marcou, Girty, 3.
    - preoblata n. sp., Weller, 6.
    - pulchella Herrick, Girty, 3.
    - vanuxemi Hall, Kindle, 1.
    - vanuxemi Hall, Raymond (P. E.), 4.
    - vanuxemi (Hall), Weller, 6.
  - Rhodocrinus sp., Girty, 3.
  - Rhoechinus Keeping, Klem, 1.
    - burlingtonensis Meek and Worthen, Klem, 1.
    - gracilis Meek and Worthen, Klem, 1.
  - Rhombopora Meek, Condra, 2.
    - lepidodendroides Meek, Condra, 2, 3.
    - lepidodendroides Meek, Girty, 3.
    - lepidendroides Meek, Sardeson, 4.
  - Rhombopteria clathratus n. sp., Weller, 6.
    - clathratus var., Weller, 6.
  - Rhombotrypa n. gen., Ulrich and Bassler, 2.
    - quadrata (Rominger), Nickles, 6.
  - Rhopalonaria Ulrich, Ulrich and Bassler, 1.
    - attenuata n. sp., Ulrich and Bassler, 1.
  - Rhopalodictyum calvertense n. sp., Martin, 8.
    - keokukensis n. sp., Ulrich and Bassler, 1.
    - marylandicum n. sp., Martin, 8.
    - medialis n. sp., Ulrich and Bassler, 1.
    - robusta n. sp., Ulrich and Bassler, 1.
    - tenuis n. sp., Ulrich and Bassler, 1.
    - venosa Ulrich, Ulrich and Bassler, 1.
  - Rhus bendirei Lesq., Knowlton, 14.
    - milleri n. sp., Hollick, 10.
    - ? sp. Lesq., Knowlton, 14.
  - Rhynchodus pertenuis n. sp., Eastman, 14.
  - Rhynchonella Fischer de Waldheim, Grabau, 1.
  - Rhynchonella Fischer de Waldheim, Dall, 8.
    - agglomerata n. sp., Decker, 6.
    - altiplicata Hall, Weller, 6.
    - bialveata Hall, Weller, 6.
    - (?) bidens Hall, Grabau, 1.
    - (?) bidentata (Hisinger), Grabau, 1.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Rhynchonella breviplicata n. sp., Weller, 6.
    - deckerensis n. sp., Decker, Weller, 6.
    - densleonis n. sp., Anderson, 3.
    - depressa n. sp., Kindle, 1.
    - gainesi Nettleroth, Kindle, 1.
    - var. cassensis n. var., Kindle, 1.
    - holmesii n. sp., Dall, 8.
    - (?) litchfieldensis n. sp., Schuchert, 4.
    - louisvillensis Nettleroth, Kindle, 1.
    - minnesotensis n. sp., Sardeson, 9.
    - robusta Hall, Grabau, 1.
    - salpinx n. sp., Dall, 8.
    - sancta n. sp., Sardeson, 9.
    - semiplicata (Con.), Weller, 6.
    - suciensis Whiteaves, Whiteaves, 12.
    - tenuistriata Nettleroth, Kindle, 1.
    - transversa Hall, Weller, 6.
    - whiteana n. sp., Anderson, 3.
  - Rhynchopora King, Greger, 2.
    - beecheri n. sp., Greger, 2.
    - illinoisensis (Worthen), Greger, 2.
    - postulosa (White), Weller, 2.
  - Rhynchospira excavata n. sp., Grabau, 9.
    - formosa Hall, Weller, 6.
  - Rhynchotrema dentata (Hall), Weller, 6.
    - formosa (Hall), Weller, 6.
    - formosa (Hall)?, Weller, 6.
    - inæquivalvis (Castel.), Weller, 6.
    - increbescens (Hall), Hayes and Ulrich, 1.
  - Rhynchotreta Hall, Grabau, 1.
    - cuneata Dalman 1827, var. americana Hall 1879, Beecher, 1.
      - var. americana Hall, Grabau, 1.
    - cuneata americana Hall, Clarke and Ruedemann, 1.
    - transversa n. sp., Weller, 6.
  - Ribeiria parva n. sp., Collie, 3.
    - turgida n. sp., Cleland, 3.
    - sp. (?), Cleland, 3.
  - Rictaxis Dall, Arnold, 2.
  - Rictocyma Dall, Dall, 8.
  - Ringicardium Fischer, Arnold, 2.
  - Ringicula dalli Clark, Clark and Martin, 2.
  - Rissoa Fréminville, Arnold, 2.
    - acutelirata Carpenter, Arnold, 2.
    - (Onoba) marylandica n. sp., Martin, 5.
    - sp. Martin, 5.
  - Rodentia, Matthew (W. D.), 19.
  - Roemerella grandis (Vanuxem), Kindle, 1.
  - Rogersia angustifolia parva n. var., Fontaine, 5.
    - longifolia Fontaine, Fontaine, 5.

Paleontology—Continued.

Genera and species described—Continued.

- Romingeria commutata n. sp., Beecher, 9.
    - cystoides n. sp. (Grabau), Greene, 2.
    - jacksoni n. sp., Beecher, 9.
    - minor n. sp., Beecher, 9.
    - ? trentonensis n. sp., Weller, 6.
    - umbellifera (Billings), Beecher, 9.
    - cfr. umbellifera, Sardeson, 12.
- Rostellaria? texana Conrad, Johnson (D. W.), 5.
- Rostellites cf. ambigua Stanton, Johnson (D. W.), 5.
    - dalli var. wellsi n. var., Johnson (D. W.), 5.
- Rotalia Lamarck, Bagg, 6.
    - beccarii (Linné), Bagg, 6, 9
    - beccarii var. brœckhiana Karrer, Bagg, 6.
- Rotalia soldanii (d'Orbigny), Bagg, 9.
- Rubioides n. gen., Perkins, 13.
    - lignita n. sp., Perkins, 13.
- Ruditapes Chiamenti, Dall, 8.
- Ruffordia goepperti (Dunker) Seward, Fontaine, 1.
- Rulac cratægifolium n. sp., Knowlton, 14.
- Rupellaria Fleurian, Arnold, 2.
- Ruscula n. gen., Casey, 5.
    - extricata n. sp., Casey, 5.
    - plicata Lea, Casey, 5.
- Rustella n. gen., Walcott, 12.
    - edsoni n. sp., Walcott, 12.
- Sabal rigida n. sp., Hatcher, 5.
- Saccoblastus, Hambach, 1.
    - ventricosus n. sp., Hambach, 1.
- Sageceras Mojsisovics, Hyatt and Smith, 1.
    - gabbi Mojsisovics, Hyatt and Smith, 1.
- Sagenites Mojsisovics, Hyatt and Smith, 1.
- Sagenites Mojsisovics, Smith (J. P.), 5.
    - (Trachysagenites) herbichi Mojsisovics, Smith (J. P.), 5.
    - (Trachysagenites) herbichi Mojsisovics, Hyatt and Smith, 1.
- Sagenocrinus, Springer (F.), 2.
    - americanus n. sp., Springer (F.), 2.
- Sagenodus cristatus n. sp., Eastman, 10.
    - pertenuis n. sp., Eastman, 11.
- Sagenopteris alaskensis n. sp., Fontaine, 2.
    - elliptica Fontaine, Fontaine, 3.
    - gœppertiana Zigno, Fontaine, 1.
    - grandifolia n. sp., Fontaine, 1.
    - mantelli (Dunker) Schenk, Fontaine, 3.
    - nervosa n. sp., Fontaine, 3.
    - nilsoniana (Brongn.), Ward, Penhallow, 4.
    - oblongifolia n. sp., Penhallow, 4.

Paleontology—Continued.

Genera and species described—Continued.

- Sagenopteris oregonensis Fontaine n. comb., Fontaine, 3.
    - paucifolia (Phill.) Ward n. comb., Fontaine, 1.
    - ? sp., Fontaine, 3.
- Sagrina (d'Orbigny, 1839) Parker and Jones, Bagg, 9.
- Sagrina d'Orbigny, Bagg, 6.
    - californiensis n. sp., Bagg, 9.
    - branneri n. sp., Bagg, 9.
    - spinosa n. sp., Bagg, 6.
- Saliciphyllum californicum n. sp., Fontaine, 3.
    - ellipticum Fontaine, Fontaine, 5.
    - pachyphyllum n. sp., Fontaine, 3.
- Salix-dayana n. sp., Knowlton, 14.
    - englehardti Lesq., Knowlton, 14.
    - mattewanensis n. sp., Berry, 5.
    - meeki Newb., Hollick, 4.
    - mixta n. sp., Knowlton, 14.
    - perplexa n. sp., Knowlton, 14.
    - proteæfolia flexuosa (Newb.) Lesq., Berry, 5.
    - pseudo-argentea n. sp., Knowlton, 14.
    - sp.? Knowlton, Knowlton, 14.
- Salpingostoma boreale n. sp., Whiteaves, 17.
- Samarangia Dall, Dall, 8.
- Samaropsis? oregonensis n. sp., Fontaine, 1.
- Sandalodus Newberry and Worthen, Branson, 1.
    - alatus Newberry and Worthen, Branson, 1.
    - carbonarius Newberry and Worthen, Eastman, 10.
    - emarginatus n. sp., Branson, 1.
    - lævissimus Newberry and Worthen, Eastman, 10.
    - latidens n. sp., Branson, 1.
    - occidentalis Leidy, Branson, 1.
    - porcatus n. sp., Branson, 1.
- Sandlingites Mojsisovics, Hyatt and Smith, 1.
    - andersoni n. sp., Hyatt and Smith, 1.
- Sanguinolaria (Nuttallia) nuttalli Conrad, Arnold, 2.
- Sanguinolites? sanduskyensis Meek, Kindle, 1.
- Sapindoides n. gen., Perkins, 13.
    - americanus (Lx.), Perkins, 13, 17.
    - cylindricus n. sp., Perkins, 13.
    - medius n. sp., Perkins, 13, 17.
    - minimus n. sp., Perkins, 13.
- Sapindoides parva n. sp., Perkins, 13.
    - varius n. sp., Perkins, 13, 17.
    - vermontanus n. sp., Perkins, 13.
- Sapindopsis oregonensis n. sp., Fontaine, 3.
    - variabilis Fontaine, Fontaine, 5.
- Sapindus imperfectus n. sp., Hollick, 11.
    - inexpectans n. sp.?, Knowlton, 18.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Sapindus merriami n. sp., Knowlton, 14.
      - morrisoni Lesq., Berry, 5.
      - obtusifolius Lesq., Knowlton, 14.
      - oregonianus n. sp., Knowlton, 14.
    - Sarcolemur furcatus Cope, Osborn, 11.
      - pygmæus Cope, Osborn, 11.
    - Sardinius? imbellis n. sp., Hay, 10.
    - Sassafras, Berry, 2.
      - acutilobum Lesq., Berry, 5.
      - bilobatum Fontaine?, Fontaine, 5.
      - hastatum Newb., Hollick, 11.
      - progenitor Newb., Berry, 7.
    - Saurocephalus Harlan, Hay, 10.
    - Saurocephalus Harlan, Stewart, 1.
      - broadheadi Stewart, Loomis, 1.
      - dentatus Stewart, Stewart, 1.
      - goodeanus (Cope), Hay, 10.
      - lanciformis Harlan, Hay, 10.
      - lanciformis Harlan, Loomis, 1.
      - phlebotomus Cope, Hay, 10.
      - xiphirostris (Stewart), Hay, 10.
    - Saurodon Hays, Loomis, 1.
    - Saurodon Hays, Stewart, 1.
      - broadheadi (Stewart), Stewart, 1.
      - ferox Stewart, Stewart, 1.
      - phlebotomus Cope, Loomis, 1.
      - phlebotomus (Cope), Stewart, 1.
      - pygmæus n. sp., Loomis, 1.
      - xiphirostris Stewart, Stewart, 1.
    - Sauropus unguifer Dawson, Matthew (G. F.), 30.
    - Saxicava arctica (Linné), Glenn, 6.
      - arctica Linn., Sears, 1.
    - Saxidomus Conrad, Arnold, 2.
    - Saxidomus Conrad, Dall, 8.
      - aratus Gould, Arnold, 2.
      - popofianus n. sp., Dall, 10.
    - Scala Humphrey, Arnold, 2.
      - bellastriata Carpenter, Arnold, 2.
      - (Opalia) calvertensis n. sp., Martin, 5.
      - carinata Lea, Clark and Martin, 2.
      - crebricostata Carpenter, Arnold, 2.
      - (Stenorhytis) expansa Conrad, Martin, 5.
      - hemphilli Dall, Arnold, 2.
      - hindsii Carpenter, Arnold, 2.
      - indianorum Carpenter, Arnold, 2.
      - marylandica n. sp., Martin, 5.
      - (Sthenorhytis) pachypleura Conrad, Martin, 5.
      - potomacensis n. sp., Clark and Martin, 2.
      - (Opalia) prunicola n. sp., Martin, 5.
      - (Opalia) reticulata n. sp., Martin, 5.
      - sayana Dall, Martin, 5.
      - sessilis Conrad, Clark and Martin, 2.
      - tincta Carpenter, Arnold, 2.
      - virginana Clark, Clark and Martin, 2.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Scalaspira Conrad, Martin, 5.
      - strumosa Conrad, Martin, 5.
    - Scapanorhynchus Woodward, Williston, 1.
      - rhaphiodon (Agassiz), Williston, 1.
    - Scaphander jugularis Conrad, Anderson, 7.
    - Scaphella (Aurinia) mutabilis (Conrad), Martin, 5.
      - (Aurinia) obtusa (Emmons), Martin, 5.
      - solitaria (Conrad), Martin, 5.
      - (Aurinia) typus (Conrad), Martin, 5.
    - Scapherpeton Cope, Stanton and Hatcher, 1.
      - tectum Cope, Lambe, 3.
    - Scaphiocrinus? longitentaculatus n. sp. (Rowley), Greene, 2.
      - ? washburni Beede, Beede, 1.
    - Scaphites condoni, Smith (W. D.), 1.
      - condoni n. sp., Anderson, 3.
      - condoni var. appressus n. var., Anderson, 3.
      - gillisi n. sp., Anderson, 3.
      - inermis, Smith (W. D.), 1.
      - inermis n. sp., Anderson, 3.
      - klamathensis n. sp., Anderson, 3.
    - Scaphites nodosus Owen, Smith (W. D.), 1.
      - nodosus brevis, Smith (W. D.), 1.
      - nodosus plenus, Smith (W. D.), 1.
      - nodosus quadrangularis, Smith (W. D.), 1.
      - perrini n. sp., Anderson, 3.
      - roguensis n. sp., Anderson, 3.
      - warreni M. and H., Johnson (D. W.), 5.
    - Scaphoceros tyrrelli n. gen. and sp., Osgood, 1.
    - Scenella pretensa n. sp., Raymond (P. E.), 7.
      - robinsoni Sears, Sears, 1.
      - robusta n. sp., Raymond (P. E.), 7.
      - cf. reticulata Billings, Matthew (G. F.), 1.
      - cf. retusa Ford, Matthew (G. F.), 1.
      - varians Walcott, Sears, 1.
    - Scenidium Hall, Grabau, 1.
      - anthonensis Sard., Weller, 6.
      - insigne (Hall), Weller, 6.
      - pyramidale Hall, Grabau, 1.
    - Sceptroneis caduceus Ehrenberg, Boyer, 1.
    - Schistoceras Hyatt, Smith (J. P.), 3.
      - fultonense Miller and Gurley, Smith (J. P.), 3.
      - hildrethi Morton, Smith (J. P.), 3.
      - hyatti n. sp., Smith (J. P.), 3.
      - missouriense Miller and Faber, Smith (J. P.), 3.

Paleontology—Continued.

Genera and species described—Continued.

- Schizambon duplicimuratus n. sp., Hudson, 1.
  - priscus n. sp., Matthew (G. F.), 9, 20.
- Schizoblastus sayi Shumard, Rowley, 4.
- Schizoblattina n. gen., Sellards, 8.
  - multinervia n. sp., Sellards, 8.
- Schizobolus concentricus (Vanuxem), Kindle, 1.
- Schizocrania superincreta Barrett, Weller, 6.
- Schizodus compressus n. sp., Beede, 1.
  - contractus Hall, Kindle, 1.
  - cuneatus Meek?, Girty, 3.
  - hari Miller, Beede, 1.
  - wheeleri (Swallow), Beede, 1.
  - subcircularis Herrick, Beede, 1.
  - trigonalis (Win.), Weller, 2.
  - sp., Beede, 8.
- Schizolopha sp., Kindle and Breger, 1.
- Schizophoria bisinuata n. sp., Weller, 6.
  - multistriata (Hall), Weller, 6.
  - sp. cf. striatula (Schl.), Weller, 6.
  - striatula (Schlotheim), Kindle, 1.
  - subelliptica (W. and W.), Weller, 2.
- Schizoporella cumulata n. sp., Ulrich and Bassler, 4.
  - doverensis n. sp., Ulrich and Bassler, 4.
  - hyalina Linn., Sears, 1.
  - hyalina, var. danversiensis Sears, Sears, 1.
  - informata (Lonsdale), Ulrich and Bassler, 4.
  - latisinuata n. sp., Ulrich and Bassler, 4.
  - subquadrata n. sp., Ulrich and Bassler, 4.
- Schizotreta papilliformis n. sp., Ruedemann, 1.
- Schlerophyllina dichotoma Heer (?) Hollick, 4.
- Schluetericeras n. gen., Hyatt, 1.
- Schmidtella Ulrich, Matthew (G. F.), 20.
  - ? acuta n. sp., Matthew (G. F.) 2, 13, 20.
  - pervetus n. sp., Matthew (G. F.), 2, 13, 20.
  - crassimarginata var. ventrilabiata n. var., Ruedemann, 2.
  - ? pervetus mut. concinna n. mut., Matthew (G. F.), 20.
- Schloenbachia austinensis F. Roemer, Lasswitz, 1.
  - austinensis Roemer var. nov. minima, Lasswitz, 1.
  - bakeri n. sp., Anderson, 3.
  - blanfordiana Stol. (?), Anderson, 3.
  - bourgeoisi d'Orb. em. Gross. var. americana n. var., Lasswitz, 1.
  - buttensis n. sp., Anderson, 3.
  - chicoënsis Trask, Anderson, 3.

Paleontology—Continued.

Genera and species described—Continued.

- Schloenbachia dentato-carinata F. Roemer, Lasswitz, 1.
  - evæ n. sp., Lasswitz, 1.
  - frechi n. sp., Lasswitz, 1.
  - frechi var. curvata n. var., Lasswitz, 1.
  - gabbi n. sp., Anderson, 3.
  - haberfellneri v. Hauer, Lasswitz, 1.
  - kiliani n. sp., Lasswitz, 1.
  - knighteni n. sp., Anderson, 3.
  - leonensis Conrad, Lasswitz, 1.
  - leonensis Conrad, var. nov. maxima, Lasswitz, 1.
  - multicosta n. sp., Anderson, 3.
  - oregonensis n. sp., Anderson, 3.
  - propinqua Stol., Anderson, 3.
  - quattuornodosa n. sp., Lasswitz, 1.
  - quattuornodosa var. planata n. var., Lasswitz, 1.
  - quinquenodosa Redtenbacher var. minuta n. var., Lasswitz, 1.
  - roemeri n. sp., Lasswitz, 1.
  - roemeri var. elegantior n. var., Lasswitz, 1.
  - roemeri var. harpax, n. var., Lasswitz, 1.
  - sequens Gross, Lasswitz, 1.
  - siskiyouensis n. sp., Anderson, 3.
  - texana F. Roemer, Lasswitz, 1.
- Schlüteria diabloënsis n. sp., Anderson, 3.
- Schuchertella n. n., Girty, 5.
- Schuchertina n. gen., Walcott, 12.
  - cambria n. sp., Walcott, 12.
- Schuchertites n. gen., Smith (J. P.), 3.
  - grahami n. sp., Smith (J. P.), 3.
- Scilliorhinus (Lamna?) gracilis Williston, Williston, 1.
- Sciurus arctomyoides n. sp., Douglass, 8.
  - jeffersoni n. sp., Douglass, 4.
  - (Prosciurus) vetustus n. subg. and sp., Matthew (W. D.), 9.
  - sp., Douglass, 8.
- Scleropteris oregonensis n. sp., Fontaine, 1.
  - vernonensis Ward, Fontaine, 5.
- Scobinella famelica n. sp., Casey, 4.
  - macer n. sp., Casey, 4.
  - pluriplicata n. sp., Casey, 4.
- Scurria ? coniformis n. sp., Johnson (D. W.), 5.
- Scutella Lamarck, Arnold, 2.
  - aberti Conrad, Clark (W. B.), 7.
  - (Echinarachnius) excentricus Eschscholtz, Arnold, 2.
  - sp., Anderson, 7.
- Scylliorhinus planidens Williston, Williston, 1.
  - rugosus (Williston), Williston, 1.
- Scytalocrinus ornatissimus Hall (sp.), Clarke, 19.
- Sedgwickia topekaensis (Shumard), Beede, 1.

Paleontology—Continued.
Genera and species described—Continued.
Sella A. Adams, Arnold, 2.
adamsii (H. C. Lea), Martin, 5.
assimilata C. B. Adams, Arnold, 2.
Selaginella marylandica n. sp., Fontaine, 5.
Selenichnus E. Hitchcock, Lull, 2.
breviusculus E. Hitchcock, Lull, 2.
falcatus E. Hitchcock, Lull, 2.
Selenosteus kepleri n. gen. et sp., Dean, 1.
Semele Schumacher, Arnold, 2.
carinata (Conrad), Glenn, 6.
carinata var. compacta Dall, Glenn, 6.
decisa Conrad, Arnold, 2.
pulchra Sowerby, Arnold, 2.
pulchra Sowerby, montereyi n. var., Arnold, 2.
subovata (Say), Glenn, 6.
Semicoscinium Prout, Grabau, 1.
tenuiceps (Hall), Grabau, 1.
Seminula argentia (Shepard) Hall, Beede, 5, 7.
argentea (Shephard), Beede, 1.
claytoni Hall and Whitfield, Girty, 3.
humilis Girty ?, Girty, 3.
subquadrata Hall ?, Girty, 3.
subtilita Hall, Girty, 3.
Semionotidæ, Eastman, 20.
Semionotus Agassiz, Eastman, 20.
agassizii (W. C. Redfield), Eastman, 20.
brauni (Newberry), Eastman, 20.
elegans (Newberry), Eastman, 20.
fultus (Agassiz), Eastman, 20.
fultus Agassiz, Eaton, 1.
gigas (Newberry), Eastman, 20.
lineatus (Newberry), Eastman, 20.
marshi W. C. Redfield, Eaton, 1.
micropterus Newberry, Eaton, 1.
micropterus (Newberry), Eastman, 20.
nilssoni Agassiz, Eastman, 20.
ovatus W. C. Redfield, Eaton, 1.
ovatus (W. C. Redfield), Eastman, 20.
robustus (Newberry), Eastman, 20.
tenuiceps Agassiz, Eaton, 1.
tenuiceps (Agassiz), Eastman, 20.
Septastrea marylandica (Conrad), Vaughan, 19.
Septifer, Recluz, Arnold, 2.
bifurcatus Conrad, Arnold, 2.
Septopora Prout, Condra, 2.
biserialis (Swal.), Sardeson, 4.
biserialis (Swallow), Condra, 2.
biserialis-nervata Ulrich, Condra, 2.
cestriensis Prout, Condra, 2.
decipiens Ulrich, Condra, 2.
multipora (Rogers), Condra, 2.
pinnata Ulrich, Condra, 2.
robusta Ulrich, Condra, 2.

Paleontology—Continued.
Genera and species described—Continued.
Sequoia ambigua Heer, Fontaine, 3, 5.
angustifolia Lesq., Knowlton, 14.
burgessii n. sp., Penhallow, 5.
cycadopsis Fontaine, Fontaine, 5.
fairbanksi n. sp., Fontaine, 2.
gracillima (Lesq.) Newb., Berry, 5–8.
heterophylla ? Velenovsky, Knowlton, 18.
? inferna Ward nom. nov., Fontaine, 5.
langsdorfii (Brongn.) Heer, Penhallow, 4, 5.
langsdorfii (Brgt.) Heer, Knowlton, 14.
penhallowii n. sp., Jeffrey, 1.
reichenbachi (Gein.) Heer, Berry, 5–7.
reichenbachi (Geinitz) Heer, Fontaine, 2, 3.
reichenbachi (Geinitz) Heer, Knowlton, 18.
sp., Knowlton, 14.
sp. ? (cone), Knowlton, 18.
(cone), Knowlton, 16.
Serpula gordialis Schlotheim, Cragin, 2.
Serpula sp., Cragin, 2.
Serpulorbis Sassi, Arnold, 2.
squamigerus Carpenter, Arnold, 2.
(Vermicularia) sp. indet., Arnold, 2.
Seymouria baylorensis n. gen. and sp Broili, 2.
Sharpeiceras n. gen., Hyatt, 1.
Shastasaurus, Merriam (J. C.), 4, 5, 6.
alexandræ n. sp., Merriam (J. C.), 4.
altispinus n. sp., Merriam (J. C.), 4.
careyi n. sp., Merriam (J. C.), 4.
osmonti n. sp., Merriam (J. C.), 4, 13.
pacificus n. sp., Merriam (J. C.), 4.
perrini n. sp., Merriam (J. C.), 4.
Shastites n. subg., Hyatt and Smith, 1.
Shepardia E. Hitchcock, Lull, 2.
palmipes E. Hitchcock, Lull, 2.
Shizocrania filosa (Hall), Weller, 6.
Shumardites n. gen., Smith (J. P.), 3.
simondsi n. sp., Smith (J. P.), 3.
Sibirites Mojsisovics, Hyatt and Smith, 1.
noetlingi n. sp., Hyatt and Smith, 1.
Sibiritidæ Mojsisovics, Hyatt and Smith, 1.
Sibyllites Mojsisovics, Hyatt and Smith, 1.
louderbacki n. sp., Hyatt and Smith, 1.
Siderastrea radians (Pallas), Vaughan, 2.
siderea (Ellis and Solander), Vaughan, 2.

Paleontology—Continued.
Genera and species described—Continued.
Sigaretus Lamarck, Arnold, 2.
debilis Gould, Arnold, 2.
fragilis Conrad, Martin, 5.
scopulosus Conrad, Anderson, 7.
Sigillaria brardii coriacea n. var., White (D.), 10.
suspecta n. sp., White (D.), 10.
Sigmagraptus n. gen., Ruedemann, 8.
præcursor n. sp., Ruedemann, 8.
Siliqua Megerle, Arnold, 2.
lucida Conrad, Arnold, 2.
patula (Dixon) var. nuttalli Conrad, Arnold, 2.
Sillimanius E. Hitchcock, Lull, 2.
gracilior E. Hitchcock, Lull, 2.
tetradactylus E. Hitchcock, Lull, 2.
Sinopa, Matthew (W. D.), 19, 20.
Sinopa Leidy, Matthew (W. D.), 1.
Sinopa Leidy, Wortman, 12.
agilis Marsh, Wortman, 12.
agilis (Marsh), Matthew (W. D.), 1.
hians (Cope), Matthew (W. D.), 1.
major Wortman, 8.
minor n. sp., Wortman, 8.
opisthotoma n. sp., Matthew (W. D.), 1.
rapax Leidy, Wortman, 12.
rapax Leidy, Matthew (W. D.), 1.
strenua (Cope), Matthew (W. D.), 1.
vera (Marsh), Matthew (W. D.), 1.
viverrina (Cope), Matthew (W. D.), 1.
whitiæ (Cope), Matthew (W. D.), 1.
Siphonalia A. Adams, Arnold, 2.
? calvertana n. sp., Martin, 5.
devexa (Conrad), Martin, 5.
kellettii Forbes, Arnold, 2.
marylandica n. sp., Martin, 5.
migrans (Conrad), Martin, 5.
Siphonetreta minnesotensis Hall and Clarke, Ruedemann, 2.
Siphonocetus clarkianus Cope, Case, 9.
expansus Cope, Case, 9.
priscus Cope, Case, 9.
Sirenites Mojsisovics, Hyatt and Smith, 1.
lawsoni n. sp., Hyatt and Smith, 1.
smithi n. sp., Burckhardt and Scalia, 1.
Skenidium anthonensis n. sp., Sardeson, 9.
? nodocostatum n. sp., Rowley, 3.
Smilodectes n. gen., Wortman, 13.
gracilis Marsh, Wortman, 13.
Smilodon, Matthew (W. D.), 19.
Solanderina Dall, Dall, 8.
Solariella S. Wood, Arnold, 2.
cidaris A. Adams, Arnold, 2.
Solariella (radiatula? var.) occidentalis, Whiteaves, 12.
peramabilis Carpenter, Arnold, 2.
Solarium amphiternum Dall, Martin, 5.
trilineatum Conrad, Martin, 5.
sp., Clark and Martin, 2.
Solecardia (Spaniorinus) cossmanni Dall, Glenn, 6.
Solemya (Janeia) vetusta Meek, Kindle, 1.
Solen Linné, Arnold, 2.
cuneatus Gabb?, Johnson (D. W.), 5.
lisbonensis (?) Aldrich, Clark and Martin, 2.
rosaceus Carpenter, Arnold, 2.
sicarius Gould, Arnold, 2.
stantoni n. sp., Weaver, 1.
Soleniscus cf. paludiniformis Hall, Girty, 3.
Solenomya parallella Beede and Rogers, Beede, 1.
radiata Meek and Worthen, Beede, 1.
trapezoides Meek, Beede, 1.
Solenopleura bretonensis n. sp., Matthew (G. F.), 20.
Solenopora compacta, Seely, 3.
jerseyensis Weller, Weller, 6.
Somphospongia Beede, Beede, 1.
favositiformis n. sp., Whitfield, 12.
multiformis Beede, Beede, 1.
Sonneratia acuto-carinata Shum., Lasswitz, 1.
acuto-carinata Shum. var. multifida Steinm., Lasswitz, 1.
stantoni n. sp., Anderson (F. M.), 3.
supani n. sp., Lasswitz, 1.
Soricidæ, Matthew (W. D.), 19.
Spaniodon simus Cope, Hay, 10.
Spathella phaselia (Win.), Weller, 2.
Spathioceras, Clarke (J. M.), 8.
Spathocharis emersoni Clark, Kindle, 1.
Sphærexochus parvus Billings, Raymond (P. E.), 5.
romingeri Hall, Kindle and Breger, 1.
Sphæriastrum Bourguignat, Dall, 8.
Sphærium Scopoli, Dall, 8.
Sphærium Scopoli, Letson, 1.
stamineum (Conr.) Prime, Letson, 1.
striatinum (Lam.) Prime, Letson, 1.
Sphærocoryphe goodnovi n. sp., Raymond (P. E.), 5.
major n. sp., Ruedemann, 2.
Sphærocystites Hall, Schuchert, 6, 11.
bloomfieldensis n. sp., Schuchert, 11.
globularis n. sp., Schuchert, 6, 11.

Paleontology—Continued.
Genera and species described—Continued.
Sphærocystites globularis ovalis n. var., Schuchert, 11.
  multifasciatus Hall, Schuchert, 11.
Sphærophthalmus alatus Boeck, Matthew (G. F.), 20.
  fletcheri n. sp., Matthew (G. F.), 9, 20.
Sphenia dubia (H. C. Lea), Glenn, 6.
Sphenlopsis Sandberger, Dall, 8.
  americana n. sp., Dall, 8.
Sphenodictya cornigera n. gen. and sp., Herzer, 3.
Sphenodiscus Meek, Hyatt, 1.
  beecheri n. sp., Hyatt, 1.
  lenticularis (Owen), Hyatt, 1.
  lenticularis var. mississippiensis, Hyatt, 1.
  lenticularis var. splendens, Hyatt, 1.
  lobatus (Tuomey), Hyatt, 1.
  pleurisepta Conrad, Lasswitz, 1.
  pleurisepta (Conrad), Hyatt, 1.
  stantoni n. sp., Hyatt, 1.
Sphenodon Günther, Osborn, 19.
Sphenolepidium oregonense n. sp., Fontaine, 1.
  sternbergianum (Dunker) Heer, Fontaine, 3.
  sternbergianum densifolium Fontaine, Fontaine, 5.
Sphenophyllum emarginatum minor D. W., White (D.), 10.
Sphenopteridium sp., White (D.), 18.
Sphenopteris filicula (Dn.) D. W., White (D.), 18.
  hoeninghausii, White (D.), 19.
Sphenotus cylindricus (Win.), Weller, 1.
Sphyrna prisca Agassiz, Eastman, 1, 18.
Spiloblattina, Sellards, 8.
  maledicta, Sellards, 8.
Spirifer, Sowerby, Beede, 1.
Spirifer Sowerby, Grabau, 1.
  acuminatus (Conrad), Kindle, 1.
  arctisegmentum Hall, Kindle, 1.
  arenosus (Con.), Weller, 6.
  audaculus (Conrad), Kindle, 1.
  audaculus (Con.)?, Weller, 6.
  boonensis Swallow?, Girty, 3.
  byrnesi Nettleroth, Kindle, 1.
  cameratus Morton, Beede, 1.
  cameratus Morton, Girty, 3.
  centronatus Winchell, Girty, 3.
  centronatus Win., Weller, 2.
  concinnus Hall, Shimer, 5.
  concinnus Hall, Weller, 6.
  corallinensis Grabau, Grabau, 9.
  crispus (Hisinger) Hall, Clarke and Ruedemann, 1.
  crispus (Hisinger), Grabau, 1.
  crispus Hisinger 1826, Beecher, 1.
  var. corallinensis Grabau, Grabau, 1.
Spirifer var. simplex Hall 1879, Beecher, 1.
  (Reticularia) crispus var. simplex Hall, Kindle and Breger, 1.
  cyclopterus Hall, Shimer, 5.
  cyclopterus Hall, Weller, 6.
  davisi Nettleroth, Kindle, 1.
  divaricatus Hall, Kindle, 1.
  duodenarius (Hall), Kindle, 1.
  eriensis Grabau, Grabau, 1.
  eriensis Grabau, Schuchert, 4.
  eriensis Grabau var., Grabau, 9.
  fimbriatus Conrad, mut. pygmæus nov., Loomis, 4.
  fimbriatus Conrad, mut. simplicissimus nov., Loomis, 4.
  foggi Nettleroth, Kindle and Breger, 1.
  fornacula Hall, Kindle, 1.
  granulosus Conrad, mut. pluto Clarke, Loomis, 4.
  granulosus (Con.), Kindle, 1.
  gregarius Clapp, Kindle, 1.
    var. greeni n. var., Kindle, 1.
  grieri Hall, Kindle, 1.
  iowensis Owen, Kindle, 1.
  lateralis, var. delicatus, n. var., (Rowley), Greene, 2.
  macconathei Nettleroth, Kindle, 1.
  macropleurus (Con.), Weller, 6.
  macrothyris Hall, Weller, 6.
  macrus Hall, Kindle, 1.
  manni Hall, Kindle, 1.
  marionensis Shumard, Weller, 2.
  marcyi Hall, mut. pygmæus nov., Loomis, 4.
  medialis Hall, mut. pygmæus nov., Loomis, 4.
  modestus corallinensis (Grabau), Schuchert, 4.
  mucronatus Conrad, Raymond (P. E.), 3, 4.
  mucronatus var. arkonensis n. var., Shimer and Grabau, 1.
  mucronatus Conrad, mut. hecate Clarke, Loomis, 4.
  mucronatus var. thedfordensis n. var., Shimer and Grabau, 1.
  murchisoni Castelnau, Shimer, 5.
  murchisoni Castelnau, Weller, 6.
  nearpassi n. sp., Weller, 6.
  niagarensis Conrad, Grabau, 1.
  nobilis Barrande, Kindle and Breger, 1.
  octocostatus Hall, Weller, 6.
  pecullaris Shumard?, Girty, 3.
  peculiaris Shum.? Weller, 2.
  pennatus (Atwater), Kindle, 1.
  perlamellosus Hall, Weller, 6.
  pikensis n. sp., Rowley, 2.
  radiatus Sowerby, Kindle and Breger, 1.
  radiatus Sowerby 1825, Beecher, 1.
  radiatus Sowerby, Grabau, 1.
  rockymontanus Marcou, Girty, 3.

Paleontology—Continued.
Genera and species described—Continued.
Spirifer segmentum Hall, Kindle, 1.
  (Delthyris) sulcatus Hall, Grabau, 1.
  tullius Hall, mut. belphegor Clarke, Loomis, 4.
  vanuxemi Hall, Shimer, 5.
  vanuxemi Hall, Grabau, 9.
  vanuxemi Hall, Weller, 6.
  vanuxemi Hall, var. minor n. var., Weller, 6.
  varicosus Hall, Kindle, 1.
  varicosa var. hobbsi (Nettleroth), Kindle, 1.
  sp., Girty, 3.
  sp. undet., Weller, 6.
Spiriferina campestris White, Girty, 3.
  cristata (Schlotheim), Beede, 1.
  horizontalis n. sp. (Rowley), Greene, 2.
  kentuckyensis Shumard, Girty, 3.
  solidirostris White?, Girty, 3.
  solidirostris (White), Weller, 2.
Spiroglyphus lituella Mörch, Arnold, 2.
Spiroloculina d'Orbigny, Bagg, 6.
  grata Terquem, Bagg, 6.
  tenuis (Czjzek), Bagg, 6.
  tenuiseptata, Guppy, 4.
Spiroplecta clarki Bagg, Bagg, 1.
Spirotropsis Sars, Arnold, 2.
Spirorbis arietina Dawson, Girty, 3.
  calvertensis n. sp., Martin, 7.
  ? dubius n. sp., Rowley, 1.
  imbricatus n. sp., Ulrich, 8.
  sp., Girty, 3.
Spisula Gray, Arnold, 2.
  callistæformis n. sp., Dall, 10.
  (Hemimactra?) chesapeakensis n. sp., Glenn, 6.
  (Hemimactra) confraga (Conrad), Glenn, 6.
  (Hemimactra) curtidens Dall, Glenn, 6.
  (Hemimactra) delumbis (Conrad), Glenn, 6.
  (Hemimactra) marylandica Dall, Glenn, 6.
  (Hemimactra) subparilis (Conrad), Glenn, 6.
  (Hemimactra) subponderosa (d'Orbigny), Glenn, 6.
  sp., Dall, 10.
Spongasteriscus marylandicus n. sp., Martin, 8.
Spondylus carlosensis n. sp., Anderson, 7.
  (sp. uncertain), Whiteaves, 12.
  sp., Shattuck, 8.
Sporangites jacksoni D. W., White (D.), 18.
Sportella patuxentia n. sp., Glenn, 6.
  pelex Dall, Glenn, 6.
  petropolitana Dall, Glenn, 6.
  recessa n. sp., Glenn, 6.
  whitfieldi Dall, Glenn, 6.

Paleontology—Continued.
Genera and species described—Continued.
Spyroceras anellus Conrad sp., Ruedemann, 2.
Squalodon atlanticus Leidy, Case, 9.
  protervus Cope, Case, 9.
Squamularia Gemmellaro, Girty, 3.
  perplexa McChesney, Girty, 3.
Squatina Duméril, Eastman, 18.
  occidentalis n. sp., Eastman, 18.
Stantonites n. subg., Hyatt and Smith, 1.
Stantonoceras n. gen., Johnson (D. W.), 5.
  pseudocostatum n. sp., Johnson (D. W.), 5.
  guadaloupæ Roemer (sp.)?, Johnson (D. W.), 5.
Staurocystis Haeckel, Schuchert, 11.
Staurograptus Emmons, Ruedemann, 8.
  dichotomus Emmons, Ruedemann, 8.
  dichotomus var. apertus n. var., Ruedemann, 8.
Stegoceras n. gen., Lambe, 3.
Stegomus longipes, Emerson and Loomis, 1.
  longipes, Lull, 3.
  validus n. sp., Lambe, 3.
Stegopelta landerensis, Williston, 26.
Stegosaurus marshi n. sp., Lucas, 2.
Stellipora antheloidea Hall, Sardeson, 3.
Stemmatocrinus? veryi n. sp., Rowley, Greene, 8.
Stemmatopteris distans n. sp., Herzer, 4.
Steneofiber Geoffroy, Matthew (W. D.), 6.
  barbouri n. sp., Gilmore, 3.
  complexus, Matthew (W. D.), 6.
  complexus n. sp., Douglass, 4.
  complexus Douglas, Peterson, 3.
  fossor n. sp., Peterson, 3.
  gradatus Cope, Peterson, 3.
  gradatus, Matthew (W. D.), 6.
  hesperus, Matthew (W. D.), 6.
  hesperus n. sp., Douglass, 4.
  hesperus Douglas, Peterson, 3.
  montanus, Matthew (W. D.), 6.
  montanus Scott, Peterson, 3.
  nebrascensis, Matthew (W. D.), 6.
  nebrascensis Leidy, Peterson 3.
  pansus Cope, Peterson, 3.
  pansus Cope, Matthew and Gidley, 1.
  pansus, Matthew (W. D.), 6.
  peninsulatus, Matthew (W. D.), 6.
  peninsulatus Cope, Peterson, 3.
Stenopteris? cretacea n. sp., Hollick, 5.
Stenonyx nom. nov., Lull, 2.
  lateralis (E. Hitchcock), Lull, 2.
Stenopora Lonsdale, Condra, 2.
  carbonaria (Worthen), Condra, 2.
  carbonaria-conferta Ulrich, Condra, 2.
  cestriensis Ulrich, Girty, 3.

Paleontology—Continued.

Genera and species described—Continued.

- Stenopora distans Condra, Condra, 1, 2.
  - heteropora Condra, Condra, 1, 2.
  - ? polyspinosa (provisional) Condra, Condra, 1, 2.
  - spinulosa Rogers, Condra, 2.
  - tuberculata (Prout), Condra, 2.
  - tuberculata, Prout, Girty, 3.
  - ? sp., Girty, 3.
- Stenosteus glaber n. gen. et. sp., Dean, 1.
- Stenotheca abrupta Shaler and Foerste (?). Sears, 1.
- Stephanocrinus Conrad, Grabau, 1.
  - angulatus Conrad, Grabau, 1.
  - deformis n. sp., Rowley, Greene, 6.
  - gemmiformis Hall, Rowley, Greene, 6.
  - hammelli Miller, Rowley, Greene, 6.
  - osgoodensis Miller, Rowley, Greene, 6.
  - quinquepartitus n. sp., Rowley, Greene, 6.
- Stephanopyxis corona (Ehrenberg), Boyer, 1.
- Sterculia cliffwoodensis n. sp., Berry, 5.
  - elegans Fontaine?, Fontaine, 5.
  - mucronata Lesq., Berry, 5.
  - snowii bilobata var. nov., Berry, 5.
- Stereocephalus tutus n. sp., Lambe, 3.
- Stereocrinus? indianensis M. & G., Rowley, Greene, 13.
- Stereosternum Cope, Osborn, 19.
- Steropoides E. Hitchcock, Lull, 2.
  - elegans E. Hitchcock, Lull, 2.
  - infelix Hay, Lull, 2.
  - ingens E. Hitchcock, Lull, 2.
  - loripes (E. Hitchcock), Lull, 2.
  - uncus (E. Hitchcock). Lull, 2.
- Stethacanthus Newberry, Eastman, 10.
  - altonensis (St. John and Worthen), Eastman, 10.
  - depressus (St. John and Worthen), Eastman, 10.
  - erectus n. sp., Eastman, 10.
  - productus Newberry, Eastman, 10.
- Stibarus montanus n. sp., Matthew, (W. D.), 9.
- Stichocapsa macropora Vinassa, Martin, 8.
- Stictoporella cribrosa Ulr., Sardeson, 4.
- Stigmaria, Poole, 1.
- Stigmatella n. gen., Ulrich and Bassler, 2.
  - clavis (Ulrich), Ulrich and Bassler, 2.
  - crenulata n. sp., Ulrich and Bassler, 2.
  - interporosa n. sp., Ulrich and Bassler, 2.
  - irregularis (Ulrich), Ulrich and Bassler, 2.
  - nana n. sp., Ulrich and Bassler, 2.

Paleontology—Continued.

Genera and species described—Continued.

- Stigmatella nicklesi n. sp., Ulrich and Bassler, 2.
  - personata n. sp., Ulrich and Bassler, 2.
  - spinosa n. sp., Ulrich and Bassler, 2.
- Stoliczkaia ex. aff. dispar d'Orb., Lasswitz, 1.
- Stoliczkia dispar (d'Orb.) Stoliczka, Anderson (F. M.), 3.
- Stomatopora inflata, Hall, Ruedemann, 2.
- Strabops thatcheri n. gen. et sp., Beecher, 3.
- Straparollina harpa n. sp., Hudson, 1.
- Straporollus cyclostomus (Hall), Kindle, 1.
  - intralobatus n. sp., Sardeson, 2.
  - luxus White, Girty, 3.
  - obtusus (Hall), Weller, 2.
  - ophirensis Hall and Whitfield, Girty, 3.
  - cf. spergenensis Hall, Girty, 3.
  - utahensis Hall and Whitfield, Girty, 3.
  - sp., Kindle, 1.
  - sp. undet., Weller, 2, 6.
- Stratodus Cope, Stewart, 1.
  - apicalis Cope, Stewart, 1.
  - oxypogon Cope, Hay, 10.
- Streblodus angustus n. sp., Eastman, 10.
- Streblopteria media Herrick, Girty, 3.
  - tenuilineata Meek and Worthen, Girty, 3.
- Streblotrypa Ulrich, Condra, 2.
  - prisca (Gabb and Horn), Condra, 2.
- Strephochetus n. gen., Seeley, 3.
  - atratus n. sp., Seely, 3.
  - brainerdi n. sp., Seely, 3.
  - ocellatus n. sp., Seely, 3.
  - prunus n. sp., Seely, 3.
  - richmondensis S. A. Miller, Seely, 3.
- Strepsidura subscalarina Heilprin, Clark and Martin, 2.
- Streptelasma Hall, Lambe, 2.
  - caliculus Hall, Lambe, 2.
  - corniculum Hall, Ruedemann, 2.
  - corniculum Hall, Weller, 6.
  - corniculum Hall, Lambe, 2.
  - latusculum var. trilobatum Whiteaves, Lambe, 2.
  - prolificum Billings (sp.), Lambe, 2.
  - rectum Hall, Lambe, 2.
  - robustum Whiteaves, Lambe, 2.
  - rusticum Billings (sp.), Lambe, 2.
  - selectum Billings (sp.), Lambe, 2.
  - strictum Hall, Weller, 6.
- Streptomytilus n. gen., Kindle and Breger, 1.

Paleontology—Continued.

Genera and species described—Continued.

- Streptomytilus wabashensis n. sp., Kindle and Breger, 1.
- Streptorhynchus subsulcatum n. sp., Sardeson, 9.
- Striatopora Hall, Grabau, 1.
  - bellistriata n. sp., Greene, 7, 8.
  - flexuosa Hall, Grabau, 1.
- Stribalocystis? elongatus Rowley, 3.
  - missouriensis Rowley, Rowley, 3.
- Strioturbonilla Sacco, Arnold, 2.
- Stromatocerium Hall, Seely, 5.
  - eatoni n. sp., Seely, 5.
  - lamottense n. sp., Seely, 5.
  - lamottense var. chazianum, Seely, 5.
  - ? monilliferum n. sp., Seely, 5.
  - pustulosum Safford, Hayes and Ulrich, 1.
  - rugosum Hall, Seely, 5.
- Stromatopora Goldfuss, Grabau, 1.
  - concentrica Goldfuss Hall, Grabau, 1.
  - constellata Hall, Schuchert, 4.
  - galtensis Dawson (sp.), Clarke and Ruedemann, 1.
  - tubulifera n. sp., Parks, 5.
- Strongylocentrotus Brandt, Arnold, 2.
  - franciscanus A. Agassiz, Arnold, 2.
  - purpuratus Stimpson, Arnold, 2.
- Strophalosia truncata Hall, Raymond (P. E.), 3, 4.
  - truncata Hall, mut. pygmæ nov., Loomis, 4.
- Stropheodonta Hall, Grabau, 1.
  - beckei Hall, Weller, 6.
  - bipartita (Hall), Weller, 6.
  - concava Hall, Raymond (P. E.), 4.
  - concava Hall, Kindle, 1.
  - corrugata Conrad, Grabau, 1.
  - cf. corrugata Conrad, Kindle and Breger, 1.
  - demissa Hall, Raymond (P. E.), 4.
  - demissa (Conrad), Kindle, 1.
  - hemispherica Hall, Kindle, 1.
  - indenta (Con.), Weller, 6.
  - inequiradiata Hall, Weller, 6.
  - inequistriata (Conrad), Kindle, 1.
  - inæquistriata Conrad, Raymond (P. E.), 3, 4.
  - junia Hall, Raymond (P. E.), 4.
  - magnifica (Hall), Weller, 6.
  - perplana Conrad, Raymond (P. E.), 3, 4.
  - perplana (Conrad), Kindle, 1.
  - perplana (Con.), Weller, 6.
  - planulata Hall, Weller, 6.
  - plicata Hall, Kindle, 1.
  - profunda Hall, Grabau, 1.
  - varistriata (Con.), Weller, 6.
  - varistriata (Conrad), Shimer, 5.
  - varistriata var. arata Hall, Shimer, 5.
  - varistriata var. arata H., Weller, 6.
  - sp. undet., Weller, 6.
- Stropheodonta sp., Kindle, 1.
- Stropholasia truncata (Hall), Wood (Elvira), 1.
- Strophograptus n. gen., Ruedemann, 8.
  - trichomanes n. sp., Ruedemann, 8.
- Strophomena, Miller (S. A.), 1.
- Strophomena Rafinesque, Nickles, 5.
  - (Eostrophomena) elegantula n. sp., Walcott, 12.
  - halli n. sp., Sardeson, 9.
  - incurvata Shepard, Raymond (P. E.), 1.
  - incurvata (Shep.), Weller, 6.
  - inquassa n. sp., Sardeson, 9.
  - planoconvexa Hall, Hayes and Ulrich, 1.
  - planumbona (Hall), Nickles, 5.
  - prisca n. sp., Raymond (P. E.), 7.
- Strophonella Hall, Grabau, 1.
  - ? conradi Hall, Shimer, 5.
  - daytonensis n. n., Foerste, 10.
  - headleyana Hall, Shimer, 5.
  - levenworthana Hall), Weller, 6.
  - ? patenta Hall, Grabau, 1.
  - punctilifera (Con.), Weller, 6.
  - striata Hall 1843, Beecher, 1.
  - striata Hall, Grabau, 1.
  - cf. striata Hall, Kindle and Breger, 1.
  - williamsi n. sp., Kindle and Breger, 1.
- Strophostylus amplus n. sp., Whiteaves, 17.
  - amplus n. sp. (Rowley), Greene, 2.
  - bivolve (W. & W.), Weller, 2.
  - filicinctus n. sp., Whiteaves, 17.
  - gebhardi (Con.), Weller, 6.
  - inflatus n. sp., Whiteaves, 17.
  - cf. nanus Meek and Worthen, Girty, 3.
  - remex White, Girty, 3.
  - sobovatus Worthen?, Girty, 3.
  - variana Hall, Kindle, 1.
  - ? sp. undet., Weller, 6.
- Stylemys calaverensis n. sp., Sinclair, 4.
- Styliferina A. Adams, Arnold, 2.
- Styliola fissurella Hall, Kindle, 1.
- Styliolina fissurella Hall, Clarke, 10.
- Styracoceras n. gen., Hyatt, 1.
- Subpulchellia n. gen., Hyatt, 1.
- Subtissotia n. gen., Hyatt, 1.
- Subulites exactus n. sp., Sardeson, 2.
  - prolongata n. sp., Raymond (P. E.), 7.
  - raymondi n. sp., Hudson, 1.
- Succinea bermudensis Pfr., Gulick, 1.
- Sula loxostyla Cope, Case, 9.
- Sunetta Link, Dall, 8.
  - section Solanderina Dall, Dall, 8.
  - section Sunetta s. s., Dall, 8.
  - section Sunettina Jousseaume, Dall, 8.
- Sunettina Jousseaume, Dall, 8.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Surcula biscatenaria Conrad, Martin, 5.
    - engonata Conrad, Martin, 5.
    - mariana n. sp., Martin, 5.
    - marylandica Conrad, Martin, 5.
    - rotifera Conrad, Martin, 5.
    - rugata Conrad, Martin, 5.
  - Surculoma n. gen., Casey, 5.
  - Sustenodactylus nom. nov., Lull, 2.
    - curvatus (E. Hitchcock), Lull, 2.
  - Swantonia n. gen., Walcott, 12.
    - antiquata Billings, Walcott, 12.
    - weeksi n. sp., Walcott, 12.
  - Syllæmus Cope, Stewart, 1.
  - Syllæmus Cope, Cragin, 1.
    - latifrons Cope, Cragin, 1.
    - latifrons Cope, Stewart, 1.
  - Symborodon acer Cope, Osborn, 10.
    - montanus Marsh, Osborn, 10.
    - torvus Cope, Osborn, 10.
  - Syndyoceras cooki, Barbour, 11.
  - Synechodus clarkii n. sp., Eastman, 1.
  - Syntegmodus n. gen., Loomis, 1.
    - altus n. sp., Loomis, 1.
  - Syntrophia Hall and Clarke, Walcott, 12.
    - abnormis n. sp., Walcott, 12.
    - alata n. sp., Walcott, 12.
    - barabuensis A. Winchell, Walcott, 12.
    - billingsi n. sp., Walcott, 12.
    - multicosta n. sp., Hudson, 1.
    - nundina n. sp., Walcott, 12.
    - orientalis n. sp., Walcott, 12.
    - primordialis Whitfield, Walcott, 12.
    - primordialis argia n. var., Walcott, 12.
    - rotundata n. sp., Walcott, 12.
    - texana n. sp., Walcott, 12.
    - texana læviusculus n. var., Walcott, 12.
    - lateralis (Whitf.), Weller, 6.
  - Syringopora aculeata Girty, Girty, 3.
    - infundibulum Whitfield, Clarke and Ruedemann, 1.
    - multattenuata McChesney, Beede, 1.
    - surcularia Girty, Girty, 3.
  - Syringostoma aurora n. sp., Parks, 5.
    - densum Nicholson, Parks, 5.
    - restigouchense Spencer, Parks, 5.
  - Syringothyris carteri Hall, Girty, 3.
    - halli Win., Weller, 2.
  - Tachyrhynchus perlaqueatus (Conrad), Martin, 5.
  - Tæniocrada palmata D. W., White (D.), 18.
  - Tæniopteris coriacea Golp., Sellards, 1.
    - coriacea var. linearis n. var., Sellards, 1.
    - major Lindley and Hutton, Fontaine, 1.
    - newberryana F. and I. C. W., Sellards, 1.
    - oregonensis n. sp., Fontaine, 1.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Tæniopteris orovillensis Fontaine, Fontaine, 1.
    - orovillensis Fontaine, Penhallow, 4.
    - vittata Brongniart, Fontaine, 1.
  - Tagassau Frisch, Matthew and Gidley, 1.
  - Tagelus Gray, Arnold, 2.
    - californianus Conrad, Arnold, 2.
  - Talarocrinus simplex Shumard, Rowley, Greene, 5.
  - Talpa ? platybrachys n. sp., Douglass, 8.
  - Talpidæ, Matthew (W. D.), 19.
  - Tancredia sp. cf. angulata Lycett, Madsen, 1.
    - sp., Madsen, 1.
  - Tapes Megerle, Arnold, 2.
  - Tapes Megerle, Dall, 8.
    - ? cuneovatus n. sp., Cragin, 2.
    - laciniata Carpenter, Arnold, 2.
    - staminea Conrad, Arnold, 2.
    - tenerrima Carpenter, Arnold, 2.
  - Taranis Jeffreys, Arnold, 2.
  - Tardeceras n. gen., Hyatt and Smith, 1.
    - parvum n. sp., Hyatt and Smith, 1.
  - Tarsodactylus E. Hitchcock, Lull, 2.
    - caudatus E. Hitchcock, Lull, 2.
    - expansus C. H. Hitchcock, Lull, 2.
  - Tarsoplectrus nom. nov., Lull, 2.
    - angustus (E. Hitchcock), Lull, 2.
    - elegans (C. H. Hitchcock), Lull, 2.
  - Taxites zamioides (Leckenby) Seward, Fontaine, 1, 2.
  - Taxocrinus Springer (F.), 2.
  - Taxodium distichum Rich., Penhallow, 5.
    - distichum miocenum Heer, Knowlton, 14.
    - laramianum n. sp., Penhallow, 6.
  - Technophorus cancellatus n. sp., Ruedemann, 1.
  - Tegoceras n. gen., Hyatt, 1.
  - Teinostoma calvertense n. sp., Martin, 5.
    - greensboroense n. sp., Martin, 5.
    - liparum (H. C. Lea), Martin, 5.
    - nanum (Lea), Martin, 5.
  - Teleoceras major Hatcher, Osborn, 34.
    - medicornutus n. sp., Osborn, 34.
  - Teleorhinus n. gen., Osborn, 33.
    - browni n. sp., Osborn, 33.
  - Tellina æquistriata Say, Glenn, 6.
    - (Angelus) bodegensis Hinds, Arnold, 2.
    - (Angelus) buttoni Dall, Arnold, 2.
    - (Angulus) declivis Conrad, Glenn, 6.
    - (Angulus) duplinlana Dall, Glenn, 6.
    - (Angelus) idæ Dall, Arnold, 2.
    - martinezensis n. sp., Weaver, 1.
    - nanaimoensis n. sp., Whiteaves, 12.
    - (Peronidia) papyria (?) Conrad, Clark and Martin, 1.

Paleontology—Continued.
Genera and species described—Continued.
- Tellina pilsbryi n. sp., Casey, 4.
  - (Angulus) producta Conrad, Glenn, 6.
  - (Angelus) rubescens Hanley, Arnold, 2.
  - (Mœrella) salmonea Carpenter, Arnold, 2.
  - (Angulus) umbra Dall, Glenn, 6.
  - sp., Dall, 10.
  - (Angelus) virginiana Clark, Clark and Martin, 1.
  - (Peronidia?) williamsi Clark, Clark and Martin, 1.
  - sp., Ravn, 1.
- Tellinocyclas Dall, Dall, 8.
- Tellinomya absimilis n. sp., Sardeson, 1.
  - candens n. sp., Sardeson, 9.
  - (or Nucula) lepida n. sp., Sardeson, 9.
  - cf. nasuta Hall, Kindle and Breger, 1.
  - novicia n. sp., Sardeson, 1.
- Temnochilus? sp., Greene, 2.
  - coxanum M. & W. sp., Rowley, Greene, 2.
- Temnograptus Nicholson, Ruedemann, 8.
  - noveboracensis n. sp., Ruedemann, 8.
- Tentaculites acula Hall?, Weller, 6.
  - bellulus Hall (?), mut. stebos Clarke, Loomis, 4.
  - dexithea Hall, Kindle, 1.
  - elongatus Hall, Weller, 6.
  - gracilistriatus Hall, Clarke, 19.
  - gracilistriatus Hall, mut. asmodeus Clarke, Loomis, 4.
  - gyracanthus (Eaton), Weller, 6.
  - scalariformis Hall, Kindle, 1.
  - tenuicinctus F. A. Roemer, Clarke, 19.
- Teonoma spelæa n. sp., Sinclair, 7.
- Terebellina n. gen., Ulrich, 4.
  - palachei n. sp., Ulrich, 4.
- Terebra Bruguiére, Arnold, 2.
  - cooperi n. sp., Anderson, 7.
  - (Acus) curvilineata Dall, Martin, 5.
  - (Acus) curvilineata var. calvertensis n. var., Martin, 5.
  - (Acus) curvilineata var., dalli n. var., Martin, 5.
  - (Acus) curvilineata var. whitfieldi n. var., Martin, 5.
  - (Acus) curvilirata Conrad, Martin, 5.
  - (Hastula) inornata Whitfield, Martin, 5.
  - juvenicostata n. sp., Brown (T. C.), 1.
  - (Hastula) patuxentia n. sp., Martin, 5.

Paleontology—Continued.
Genera and species described—Continued.
- Terebra (Hastula) simplex Conrad, Martin, 5.
  - (Acus) simplex Carpenter, Arnold, 2.
  - (Hastula) simplex var. sublirata, Conrad, Martin, 5.
  - (Acus) sincera Dall, Martin, 5.
  - unilineata Conrad, Martin, 5.
  - sp.?, Brown (T. C.), 1.
- Terebratalia Beecher, Arnold, 2.
  - hemphilli Dall, Arnold, 2.
  - smithi n. sp., Arnold, 2.
- Terebratella harveyi n. sp., Whiteaves, 12.
- Terebratula (Chidonophora) filosa Conrad, Dall, 8.
  - harlani Morton, Clark and Martin, 3.
  - jucunda Hall, Kindle, 1.
  - obsoleta Dall, Beecher, 1.
  - wilmingtonensis Lyell and Sowerby, Dall, 8.
- Teredo virginiana Clark, Clark and Martin, 2.
  - ? sp., Dall, 10.
  - sp., Ravn, 1.
- Terminonaris n. n., Osborn, 33.
- Terrapene eurypygia (Cope), Hay, 14.
- Testudo atascosæ n. sp., Hay, 14.
  - brontops Marsh, Hay, 13.
  - osborniana n. sp., Hay, 17.
- Tetracarcinus subquadratus n. gen. and sp., Weller, 10.
- Tetracystis n. gen., Schuchert, 11.
  - chrysalis n. sp., Schuchert, 11.
  - fenestratus n. sp. (Troost), Schuchert, 11.
- Tetradella (?) sp., Jones (T. R.), 2.
- Tetragonites timotheanus? Mayor, Whiteaves, 12.
- Tetragraptus Salter, Ruedemann, 8.
  - amii Lapworth ms., Elles and Wood, em., Ruedemann, 8.
  - clarkei n. sp., Ruedemann, 8.
  - fruticosus Hall sp., Ruedemann, 8.
  - (Etagraptus) lentus n. sp., Ruedemann, 8.
  - pendens Elles, Ruedemann, 8.
  - pygmæus n. sp., Ruedemann, 8.
  - quadribrachiatus Hall (sp.), Ruedemann, 8.
  - serra Brongniart sp., Ruedemann, 8.
  - similis Hall (sp.), Ruedemann, 8.
  - taraxacum Ruedemann, Ruedemann, 8.
  - woodi n. sp., Ruedemann, 8.
- Tetranota bidorsata (Hall), Weller, 6.
- Textivenus Cossmann, Dall, 8.
- Textularia Defrance, Bagg, 6.
  - abbreviata d'Orbigny, Bagg, 6.
  - agglutinans d'Orbigny, Bagg, 6.
  - articulata d'Orbigny, Bagg, 6.
  - aspera, Guppy, 4.
  - carinata d'Orbigny, Bagg, 6.

Paleontology—Continued.
Genera and species described—Continued.
Textularia carinatus, Guppy, 4.
  gramen d'Orbigny, Bagg, 1, 6.
  gramen, Guppy, 4.
  sagittula, Guppy, 4.
  sagittula Defrance, Bagg, 1, 6.
  subangulata d'Orbigny, Bagg, 1, 6.
  trochus, Guppy, 4.
Thalassoceratidæ, Hyatt and Smith, 1.
Thalattosauria, Merriam (J. C.), 15.
Thalattosauridae, Merriam (J. C.), 15.
Thalattosaurus Merriam, Merriam (J. C.), 15.
Thalattosaurus alexandræ n. gen. and n. sp., Merriam (J. C.), 11, 12, 15.
  perrini n. sp., Merriam (J. C.), 15.
  shastensis n. sp., Merriam (J. C.), 15.
Thaleops ovata Conrad, Raymond (P. E.), 5.
Thalotia Gray, Arnold, 2.
  caffea Gabb, Arnold, 2.
Thamniscus King, Condra, 2.
  palmatus n. sp. (provisional), Condra, 1.
  palmatus (provisional) Condra, Condra, 2.
  pinnatus n. sp., Condra, 1.
  pinnatus Condra, Condra, 2.
  sevillensis Ulrich, Condra, 2.
Thamnocladus clarkei n. gen. and sp., White (D.), 6.
Thecachampsa Cope, Case, 9.
  ? antiqua (Leidy), Case, 9.
  ? contusor Cope, Case, 9.
  contusor Cope, Case, 1.
  marylandica Clark, Case, 1.
  sericodon (?) Cope, Case, 1.
  ? sericodon Cope, Case, 9.
  ? sicaria Cope, Case, 9.
  sp., Case, 1.
Thecalia H. and A. Adams, Dall, 8.
Thecla kentuckyensis n. sp., Herzer, 5.
  schriveri n. sp., Herzer, 5.
Thecodonta (Dicranodesma) calvertensis n. sp., Glenn, 6.
Thenaropus heterodactylis King, Matthew (G. F.), 25.
Theonoa glomerata n. sp., Ulrich and Bassler, 4.
Theranopus mcnaughtoni n. sp., Matthew (G. F.), 23.
Theriodontia Broom, Case, 11.
Therocephalia Broom, Case, 11.
Theropleura uniformis, Case, 6.
Thetironia Stoliczka, Dall, 8.
Thinnfeldia Ettings., Berry, 3.
  fontainei n. n., Berry, 3.
Thinnfeldia marylandica n. sp., Fontaine, 5.
  subintegrifolia (Lesq.) Knowlton, Hollick, 4.
  variabilis Vel.?, Hollick, 4.
  variabilis Fontaine, Fontaine, 5.
Thinohyus (Bothrolabis) decedens Cope, Sinclair, 6.

Paleontology—Continued.
Genera and species described—Continued.
Thinohyus (Bothrolabis) osmonti n. sp., Sinclair, 6.
Thomomys microdon n. sp., Sinclair, 7.
Thoracoceras wilsoni n. sp., Clarke, 2.
  wilsoni Clarke, Wilson (J. D.), 1.
Thracia (Leach) Blainville, Arnold, 2.
Thracia Blainville, Dall, 8.
  section Ixartia Leach, Dall, 8.
  section Thracia s. s., Dall, 8.
  conradi Couthouy, Dall, 8.
  conradi Couthouy, Glenn, 6.
  dilleri Dall, Dall, 8.
  karquinesensis n. sp., Weaver, 1.
  ? maloniana n. sp., Cragin, 2.
  transversa Lea, Dall, 8.
  trapezoides Conrad, Arnold, 2.
Thryptodus n. gen., Loomis, 1.
  rotundus n. sp., Loomis, 1.
  zitteli n. sp., Loomis, 1.
Thuites sp., Knowlton, 14.
Thuja cretacea? (Heer) Newberry, Knowlton, 18.
  sp., Penhallow, 6.
Thyasira (Leach) Lamarck, Dall, 8.
  section Axinulus Verrill and Bush, Dall, 8.
  section Thyasira s. s., Dall, 8.
  bisecta Conrad, Arnold, 2.
  bisecta Conrad, Dall, 8.
  flexuosa Montagu, Dall, 8.
  gouldi Philippi, Arnold, 2.
  trisinuata Orbigny, Dall, 8.
Thysanocrinus arborescens n. sp., Talbot, 2.
Thyrsopteris crassinervis Fontaine, Fontaine, 5.
  decurrens Fontaine, Fontaine, 5.
  elliptica Fontaine, Fontaine, 4.
  meekiana Fontaine, Fontaine, 5.
  murrayana (Brongniart) Heer, Fontaine, 1, 2.
  rarinervis Fontaine?, Fontaine, 3, 5.
Thysanocrinus Hall, Grabau, 1.
  liliiformis Hall, Grabau, 1.
Tilia weedii n. sp., Knowlton, 12.
Timoclea Brown, Dall, 8.
Tirolites Mojsisovics, Hyatt and Smith, 1.
  (Metatirolites) foliaceus Dittmar, Hyatt and Smith, 1.
  pacificus n. sp., Hyatt and Smith, 1.
Titanotherium, Hatcher, 7.
  dispar Marsh, Hatcher, 7.
  ingens Marsh, Osborn, 10.
  heloceras Cope, Osborn, 10.
  trigonoceras Cope, Osborn, 10.
Tivela Link, Arnold, 2.
Tivela Link, Dall, 8.
  section Eutivela Dall, Dall, 8.
  section Pachydesma Conrad, Dall, 8.
  section Tivela s. s., Dall, 8.
  crassatelloides Conrad, Arnold, 2,

Paleontology—Continued.
Genera and species described—Continued.
Tivela jamaicensis n. sp., Dall, 8.
  (Pachydesma) stultorum Mawe, Dall, 8.
Tivelina Cossman, Dall, 8.
Tolypeceras n. gen., Hyatt, 1.
Tomopleura n. gen., Casey, 5.
Toretocnemus n. gen., Merriam (J. C.), 6, 13.
  californicus n. sp., Merriam, (J. C.), 6.
Tornatellæa bella Conrad, Clark and Martin, 2.
Tornatina A. Adams, Arnold, 2.
  cerealis Gould, Arnold, 2.
  culcitella Gould, Arnold, 2.
  eximia Baird, Arnold, 2.
  harpa Dall, Arnold, 2.
Tornoceras Hyatt, Beecher, 1.
  cinctum Keyserling, Clarke, 19.
  uniangulare Conrad, Loomis, 4.
  uniangulare Conrad, mut. astarte Clarke, Loomis, 4.
Tornquistites n. gen., Hyatt and Smith, 1.
  evolutus n. sp., Hyatt and Smith, 1.
Toxichnus E. Hitchcock, Lull, 2.
Toxochelys Cope, Wieland, 12.
  bauri n. sp., Wieland, 12.
  brachyrhinus Case, Hay, 24.
  latiremis, Wieland, 2.
  latiremis Cope, Williston, 3.
  latiremis Cope, Hay, 24.
  latiremis Cope, Wieland, 12.
  procax n. sp., Hay, 24.
  serrifer Cope, Hay, 24.
  stenoporus n. sp., Hay, 24.
Trachodon altidens Lambe, Stanton and Hatcher, 1.
  (Pteropelyx) altidens n. sp., Lambe, 3.
  annectens, Lucas, 21.
  (Pteropelyx) marginatus n. sp., Lambe, 3.
  (Pteropelyx) selwyni n. sp., Lambe, 3.
Trachycardium Mörch, Arnold, 2.
Trachyceras Laube, Hyatt and Smith, 1.
Trachyceras Laube, Smith (J. P.), 5.
  (Anolcites) hyatti n. sp., Smith (J. P.), 5.
  (Protrachyceras) lecontei n. sp., Hyatt and Smith, 1.
  (Anolcites) meeki Mojsisovics, Hyatt and Smith, 1.
  (Anolcites) meeki Mojsisovics, Smith (J. P.), 5.
  (Protrachyceras) shastense n. sp., Smith (J. P.), 5.
  (Protrachyceras) sp. ind., Burckhardt and Scalia, 1.
Trachypora austini Worthen, Beede, 1.
  oriskania n. sp., Weller, 6.

Paleontology—Continued.
Genera and species described—Continued.
Trachysagenites Mojsisovics, Hyatt and Smith, 1.
Transennella Dall, Dall, 8.
  caloosana n. sp., Dall, 8.
  carolinensis n. sp., Dall, 8.
  chipolana n. sp., Dall, 8.
  santarosana n. sp., Dall, 8.
  utica n. sp., Dall, 8.
  ? cuneata Knowlton, 18.
  ? microphylla Lesquereux, Knowlton, 18.
Trapezium (Humphrey) Mühlfield, Dall, 8.
  claibornense Dall, Dall, 8.
Truskites n. subg., Hyatt and Smith, 1.
Trematonotus alpheus Hall, Clarke and Ruedemann, 1.
Trematopora Hall, Grabau, 1.
  (?) striata Hall, Grabau, 1.
  tuberculosa Hall, Grabau, 1.
Trematospira Hall, Grabau, 1.
  camura Hall, Grabau, 1.
Trematospira multistriata Hall, Weller, 6.
Tresus Gray, Arnold, 2.
  nuttalli Conrad, Arnold, 2.
Tretaspis diademata n. sp., Ruedemann, 2.
  reticulatus n. sp., Ruedemann, 2.
Tretulias Cope, Case, 9.
  buccatus Cope, Case, 9.
Triacodon fallax Marsh, Wortman, 4.
Triænaspis Cope, Hay, 10.
  virgulatus Cope, Hay, 10.
Triænopus E. Hitchcock, Lull, 2.
  baileyanus E. Hitchcock, Lull, 2.
Triarthrus becki, Beecher, 1.
  becki Green, Beecher, 4, 7.
  belli n. sp., Matthew (G. F.), 12, 20.
Tricælocrinus woodmani? M. & W. Rowley, Greene, 14.
Tricalycites major n. sp., Hollick, 11.
  papyraceus Newb., Berry, 7.
  papyraceus Newb., Hollick, 4.
Tricarpellites acuminatus n. sp., Perkins, 13.
  amygdaloideus n. sp., Perkins, 13.
  angularis n. sp., Perkins, 13.
  carinatus n. sp., Perkins, 13.
  castanoides n. sp., Perkins, 13.
  contractus n. sp., Perkins, 13.
  dalei n. sp., Perkins, 13.
  elongatus n. sp., Perkins, 13.
  fagoides n. sp., Perkins, 13.
  fissilis (Lx.), Perkins, 13.
  fissilis Lesq., Knowlton, 11.
  fissilis (Lesquereux) Perkins, Perkins, 17.
  hemiovalis n. sp., Perkins, 13.
  inequalis n. sp., Perkins, 13.
  lignitus n. sp., Perkins, 13.
  major n. sp., Perkins, 13.
  obesus n. sp., Perkins, 13.
  ovalis n. sp., Perkins, 13.

Paleontology—Continued.
Genera and species described—Continued.
Tricarpellites pringlei n. sp., Perkins, 13.
rostratus n. sp., Perkins, 13.
rugosus n. sp., Perkins, 13.
seelyi n. sp., Perkins, 13.
Triceratops, Beasley, 2.
brevicornus n. sp., Hatcher, 22.
prorsus, Gilmore, 4.
prorsus, Schuchert, 14.
serratus Marsh, Lull, 1.
Trichechus giganteus ? (De Kay), Case, 9.
Tricœlocrinus woodmani M. & G., Rowley, 5.
Tridonta Schumacher, Dall, 8.
Triforis Deshayes, Arnold, 2.
adversa Montagu, Arnold, 2.
Trigenicus socialis n. gen. and sp., Douglass, 8.
Trigeria ? curriei n. sp., Rowley, 1.
lepida Hall, Raymond (P. E.), 3. 4.
lepida Hall, mut. pygmæa nov., Loomis, 4.
Trigonia calderoni (Castillo and Aguilera), Cragin, 2.
conferticostata n. sp., Cragin, 2.
emoryi Conrad, Jones (A. W.), 2.
Trigonia emoryi Conrad, Shattuck, 8.
evansana Meek, Whiteaves, 12.
goodellii Cragin, Cragin, 2.
munita n. sp., Cragin, 2.
præstriata n. sp., Cragin, 2.
proscabra n. sp., Cragin, 2.
radicostata n. sp., Cragin, 2.
undulata Fromherz, Madsen, 1.
vyschetzkii Cragin, Cragin, 2.
Trigonias osborni n. sp., Lucas (F. A.), 1.
osborni Lucas, Hatcher, 3.
Trigonoarca decisa (Conrad) var., Clark and Martin, 2.
Trigonograptus Nicholson, Ruedemann, 8.
ensiformis Hall sp., Ruedemann, 8.
Trihamus E. Hitchcock, Lull, 2.
elegans E. Hitchcock, Lull, 2.
magnus C. H. Hitchcock, Lull, 2.
Triisodon heilprianus Cope, Matthew (W. D.), 1.
Trimerella borealis n. sp., Whiteaves, 3.
equanensis n. sp., Whiteaves, 3.
sp. Kindle and Breger, 1.
Trimeroceras gilberti n. sp., Kindle and Breger, 1.
Trimerocystis n. gen., Schuchert, 11.
peculiaris n. sp., Schuchert, 11.
Trimerorhachis Cope, Broili, 2.
insignis Cope, Broili, 2.
insignis (?) Cope, Case, 3.
leptorhynchus n. sp., Case, 3.
Trinacromerum Cragin, Williston, 14.
Trinucleus, Beecher, 1.
concentricus (Eaton), Weller, 6.
Trionyx cellulosus Cope, Case, 9.

Paleontology—Continued.
Genera and species described—Continued.
Trionyx foveatus Leidy, Stanton and Hatcher, 1.
foveatus Leidy, Lambe, 3, 5.
vagans Cope, Lambe, 3, 5.
vagans Cope, Stanton and Hatcher, 1.
virginia Clark, Case, 1.
sp., Case, 9.
Triplecia gracilis n. sp., Raymond (P. E.), 1.
Tripleurocrinus n. gen., Wood (Elvria), 3.
levis n. sp., Wood (Elvira), 3.
Tristylotus n. gen., Parks, 6.
hexagonus n. sp., Parks, 6.
rhomboideus n. sp., Parks, 6.
Triticites n. gen., Girty, 9.
secalicus Say, Girty, 9.
Tritonium Link, Arnold, 2.
centrosum (Conrad), Martin, 5.
cerrillosensis n. sp., Johnson (D. W.), 6.
eocenicum n. sp., Weaver, 1.
gibbosus Broderip, Arnold, 2.
impressum n. sp., Weaver, 1.
kanabense Stanton, Johnson (D. W.), 5.
(Priene) oregonensis Redfield, Arnold, 2.
pulchrum n. sp., Weaver, 1.
showalteri (Conrad), Clark and Martin, 2.
Trivia Gray, Arnold, 2.
californica Gray, Arnold, 2.
solandri Gray, Arnold, 2.
Trochactæon semicostatus n. sp., Whiteaves, 12.
Trochita alaskana n. sp., Dall, 10.
Trochoceras Hall, Grabau, 1.
costatum Hall, Clarke and Ruedemann, 1.
desplainense McChesney, Clarke and Ruedemann, 1.
(Sphyradoceras) cf. desplainense, McChesney ?, Kindle and Breger, 1.
gebhardi Hall, Grabau, 1.
Trochocyathus clarkeanus Vaughan, Vaughan, 1.
Trocholites Conrad, Whiteaves, 13.
ammonius Conrad, Whiteaves, 13.
canadensis Hyatt, Whiteaves, 13.
planorbiformis Conrad, Whiteaves, 13.
Trochonema dispar n. sp., Raymond (P. E.), 7.
emacerata Hall and Whitf., Kindle, 1.
cf. fatuum Hall, Clarke and Ruedemann, 1.
rectilatera Hall and Whitfield, Kindle, 1.
umbilicatum Hall sp., Ruedemann, 2.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Trochosmilia ? sp. indet., Vaughan, 17.
  - Trochus sp., Shattuck, 8.
  - Troödon formosus Leidy, Lambe, 3.
  - Troostocrinus ? dubius Rowley, Rowley, 3.
  - Trophon Montfort, Arnold, 2.
    - (Boreotrophon) cerritensis n. sp., Arnold, 2.
    - chesapeakanus n. sp., Martin, 5.
    - gabbiana n. sp., Anderson, 7.
    - (Boreotrophon) gracilis Perry, Arnold, 2.
    - kernensis n. sp., Anderson, 7.
    - (Boreotrophon) multicostatus Eschscholtz, Arnold, 2.
    - (Boreotrophon) pedroana n. sp., Arnold, 2.
    - (Boreotrophon) scalariformis Gould, Arnold, 2.
    - (Boreotrophon) stuarti Smith, Arnold, 2.
    - (Boreotrophon) stuarti Smith, var. præcursor new var., Arnold, 2.
    - sublevis Harris, Clark and Martin, 2.
    - (Boreotrophon) tenuisculptus Carpenter, Arnold, 2.
    - tetricus Conrad, Martin, 5.
    - tetricus var. lævis n. var., Martin, 5.
    - (Boreotrophon) triangulatus Carpenter, Arnold, 2.
    - sp., Martin, 5.
  - Tropidocyclas Dall, Dall, 8.
  - Tropidocyclus De Koninck, Clarke, 19.
    - hyalinus n. sp., Clarke, 19.
  - Tropiceltites Mojsisovics, Hyatt and Smith, 1.
    - frechi n. sp., Hyatt and Smith, 1.
  - Tropidocaris, Beecher, 8.
    - alternata, Beecher, 8.
    - bicarinata, Beecher, 8.
  - Tropidoleptus carinatus (Conrad), Kindle, 1.
    - carinatus Conrad, Raymond (P. E.), 3, 4.
    - carinatus (Con.), Weller, 6.
    - carinatus Conrad. mut. pygmæus nov., Loomis, 4.
  - Tropidomya Dall and Smith, Dall, 8.
  - Tropisurcula n. gen., Casey, 5.
    - caseyi Ald., Casey, 5.
    - crenula n. sp., Casey, 5.
  - Tropites Mojsisovics, Hyatt and Smith, 1.
  - Tropites Mojsisovics, Smith (J. P.), 5.
    - dilleri n. sp., Smith (J. P.), 5.
    - subbullatus Hauer, Hyatt and Smith, 1.
    - torquillus Mojsisovics, Smith (J. P.), 5.
  - Tropitidæ Mojsisovics, Hyatt and Smith, 1.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Tropitoidea Hyatt and Smith, 1.
  - Truncatella sp. indet., Dall, 15.
  - Truncatulina d'Orbigny, Bagg, 6.
    - lobatula (Walker and Jacob), Bagg, 1, 6, 9.
    - pygmæa Hantken, Bagg, 9.
    - ungeriana (d'Orbigny), Bagg, 1.
    - variabilis d'Orbigny, Bagg, 9.
    - variabilis d'Orbigny, Bagg, 6.
    - wuellerstorfi (Schwager), Bagg, 9.
  - Tryblidium exsertum n. sp., Sardeson, 9.
    - patulum n. sp., Cleland, 3.
    - repertum n. sp., Sardeson, 2.
    - validum n. sp., Sardeson, 9.
  - Trypanotoma Coss., Casey, 5.
    - longispira n. sp., Casey, 5.
    - obtusa n. sp., Casey, 5.
    - terebriformis Meyer, Casey, 5.
  - Tuba marylandica n. sp., Clark and Martin, 2.
  - Tudicla marylandica n. sp., Clark and Martin, 2.
    - sp., Clark and Martin, 2.
  - Turbinella ? demissa Conrad, Martin, 5.
    - (Psilocochlis) mccallie, Dall, 12.
  - Turbinolia acuticostata Vaughan, Vaughan, 1.
  - Turbo? beneclathratus n. sp., Cragin, 2.
    - shumardi De Verneuil, Kindle, 1.
  - Turbonilla Risso, Arnold, 2.
    - (Pyrgolampros) adleri D. & B., n. sp., Arnold, 2.
    - (Pyrgolampros) arnoldi D. & B., n. sp., Arnold, 2.
    - (Lancea) aurantia Carpenter, Arnold, 2.
    - (Pyrgiscus) auricoma D. & B., n. sp., Arnold, 2.
    - (Pyrgiscus) crebrifilata Carpenter, Arnold, 2.
    - (Pyrgolampros) gibbosa Carpenter, Arnold, 2.
    - (Tragula) gubernatoria n. sp., Martin, 5.
    - (Pyrgiscus) interrupta (Totten), Martin, 5.
    - (Pyrgisculus) laminata Carpenter, Arnold, 2.
    - (Pyrgiscus) latifundia D. & B., n. sp., Arnold, 2.
    - (Pyrgolampros) lowei D. & B., n. sp., Arnold, 2.
    - (Pyrgolampros) lowei, var pedroana D. & B., n. sp., Arnold, 2.
    - (Strioturbonilla) muricata Carpenter, Arnold, 2.
    - (Chemnitzia) nivea Stimpson, Martin, 5.
    - (Chemnitzia) nivea stimpson var., Martin, 5.
    - (Lancea) pentalopha D. & B., n. sp., Arnold, 2.
    - potomacensis n. sp., Clark and Martin, 2.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Turbonilla (Strioturbonilla) similis C. B. Adams, Arnold, 2.
    - (Strioturbonilla) stearnsii D. & B., n. sp., Arnold, 2.
    - (Pyrgiscus) subcuspidata Carpenter, Arnold, 2.
    - (Pyrgiscus) tenuicula Gould, Arnold, 2.
    - (Strioturbonilla) torquata Gould, Arnold, 2.
    - (Strioturbonilla) torquata, var. stylina Carpenter, Arnold, 2.
    - (Lancea) tridentata Carpenter, Arnold, 2.
  - Turrilepas (?) filosa n. sp., Ruedemann, 1.
  - Turritella Lamarck, Arnold, 2.
    - æquistriata Conrad, Martin 5.
    - belevederei Cragin, Jones (A. W.), 2.
    - budaensis n. sp., Shattuck, 8.
    - burkarti n. sp., Cragin, 2.
    - conica n. sp., Weaver, 1.
    - cooperi Carpenter, Arnold, 2.
    - galisteoensis n. sp., Johnson (D. W.), 5.
    - humerosa Conrad, Clark and Martin, 2.
    - indenta Conrad, Martin, 5.
    - jewettii Carpenter, Arnold, 2.
    - mortoni Conrad, Clark and Martin, 2.
    - plebeia Say, Martin, 5.
    - potomacensis n. sp., Clark and Martin, 2.
    - variabilis Conrad, Martin, 5.
    - variabilis var., Martin, 5.
    - variabilis var. alticostata Conrad, Martin, 5.
    - variabilis var. cumberlandia Conrad, Martin, 5.
    - variabilis var. exaltata Conrad, Martin, 5.
    - sp.?, Brown (T. C.), 1.
  - Turrilites brazoensis F. Roemer, Lasswitz, 1.
    - peramplus n. sp., Lasswitz, 1.
    - wysogorskii n. sp., Lasswitz, 1.
  - Tylocrinus n. gen., Wood (Elvira), 3.
    - novus n. sp. Wood (Elvira), 3.
  - Typha sp., Penhallow, 4.
  - Typhis acuticosta Conrad, Martin, 5.
  - Typopus E. Hitchcock, Lull, 2.
    - abnormis E. Hitchcock, Lull, 2.
    - gracilis E. Hitchcock, Lull, 2.
  - Tyrannosaurus rex. n. gen. and sp., Osborn, 50.
  - Uintacrinus Grinnell, Springer (F.), 1.
    - socialis Grinnell, Springer (F.), 1.
    - socialis, Schuchert, 8.
    - socialis Grinnell, Hovey (E. O.), 14.
    - sp., Whiteaves, 15.
  - Uintacyon Leidy, Wortman, 2.
    - edax Leidy, Wortman, 2.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Ulias Cope, Case, 9.
    - moratus Cope, Case, 9.
  - Ulmus basicordata n. sp., Hollick, 10.
    - californica? Lesq., Knowlton, 14.
    - newberryi n. sp., Knowlton, 14.
    - speciosa Newb., Knowlton, 14.
  - Umbraculum (Eosinica) elevatum n. sp., Aldrich, 3.
  - Unicardium? semirotundum n. sp., Cragin, 2.
    - ? transversum n. sp., Cragin, 2.
  - Uncinulus mutabilis (Hall), Weller, 6.
    - nucleolatus (Hall), Weller, 6.
    - pyramidatus (Hall), Weller, 6.
    - vellicatus (Hall), Weller, 6.
  - Unio Retzius, Letson, 1.
    - æsopiformis n. sp., Whitfield, 6.
    - aldrichi White, White (C. A.), 1.
    - belliplicatus Meek, White (C. A.), 1.
    - brachyopisthus White, White (C. A.), 1.
    - browni n. sp., Whitfield, 6.
    - crassidens Lam., Wagner, 2.
    - cretacollis n. sp., Maury, 1.
    - cristonensis Meek, White (C. A.), 1.
    - douglassi n. sp., Stanton, 4.
    - endlichi White, White (C. A.), 1.
    - farri n. sp., Stanton, 4.
    - felchii White, White (C. A.), 1.
    - gibbosus Barnes, Letson, 1.
    - gonionotus White, White (C. A.), 1.
    - goniambonatus White, White (C. A.), 1.
    - holmesianus White, White (C. A.), 1.
    - iridoides White, White (C. A.), 1.
    - mecropisthus White, White (C. A.), 1.
    - nanaimoensis n. sp., Whiteaves, 1, 12.
    - nucalis Meek and Hayden, White (C. A.), 1.
    - percorrugata n. sp., Whitfield, 6.
    - postbiblicata n. sp., Whitfield, 6.
    - primevus White, White (C. A.), 1.
    - priscus Meek and Hayden?, Stanton and Hatcher, 1.
    - priscus var. abbreviatus n. var., Staton, Stanton and Hayden, 1.
    - proavitus White, White (C. A.), 1.
    - propheticus White, White (C. A.), 1.
    - retusoides n. sp., Whitfield, 6.
    - senectus White, White (C. A.), 1.
    - stantoni n. sp., White (C. A.), 1.
    - stewardi White, White (C. A.), 1.
    - supenawensis n. sp., Stanton, Stanton and Hatcher, 1.
    - subspatulatus Meek and Hayden, Stanton and Hatcher, 1.
    - toxonotus White, White (C. A.), 1.
    - ? trigoniaformis n. sp., Maury, 1.

Paleontology—Continued.
Genera and species described—Continued.
Unio verrucosiformis n. sp., Whitfield, 6.
    vetustus Meek, White (C. A.), 1.
Unitrypa, Cumings, 9.
    præcursa (Hall), Shimer, 5.
Urolophus halleri (?) Cooper, Arnold, 2.
Uronautes Cope, Williston, 14.
Urosalpinx cinereus (Say)?, Martin, 5.
    rusticus (Conrad), Martin, 5.
Urosyca robusta n. sp., Weaver, 1.
Urotheca n. gen., Matthew (G. F.), 1.
    pervetus n. sp., Matthew (G. F.), 1.
    sp., Matthew (G. F.), 12, 20.
Ursavus sp., Matthew (W. D.), 5.
Ussuria Diener, Hyatt and Smith, 1.
    compressa n. sp., Hyatt and Smith, 1.
    waageni n. sp., Hyatt and Smith, 1.
Uvigerina d'Orbigny, Bagg, 6.
    canariensis d'Orbigny, Bagg, 6, 9.
    pygmæa d'Orbigny, Bagg, 6, 9.
    raphanus, Guppy, 4.
    tenuistriata Reuss, Bagg, 6, 9.
Vaccinium alaskanum n. sp., Knowlton, 16.
Vaginulina legumen (Linné), Bagg, 1.
Valvata Muller, Letson, 1.
    sincera Say, Letson, 1.
    tricarinata Say, Letson, 1.
Vanikoro pulchella var., Whiteaves, 12.
Varanosaurus acutirostris n. gen. and sp., Broili, 2.
Varicobela n. gen., Casey, 5.
Veloritina Meek, Dall, 8.
Venerella Cossmann, Dall, 8.
Venericardia Lamarck, Arnold, 2.
Venericardia Lamarck, Dall, 8.
    section Cardites s. s., Dall, 8.
    section Cyclocardia Conrad, Dall, 8.
    (Pteromeris) acaris n. sp., Dall, 8.
    alticostata Conrad, Dall, 8.
    barbarensis Stearns, Arnold, 2.
    bulla n. sp., Dall, 8.
    (Cyclocardia) californica n. sp., Dall, 8.
    carsonensis n. sp., Dall, 8.
    castrana n. sp., Glenn, 6.
    granulata Say, Glenn, 6.
    (Cyclocardia) granulata Say, Dall, 8.
    greggiana n. sp., Dall, 8.
    hadra n. sp., Dall, 8.
    himerta n. sp., Dall, 8.
    marylandica n. sp., Clark and Martin, 2.
    nasuta n. sp., Dall, 8.
    (Pleuromeris) parva Lea, Dall, 8.
    (Pteromeris) perplana Conrad, Dall, 8.
    planicosta Lamarck, Dall, 8, 10.

Paleontology—Continued.
Genera and species described—Continued.
Venericardia planicostata var. regia Conrad, Clark and Martin, 2.
    potapacoensis n. sp., Clark and Martin, 2.
    præcisa n. sp., Dall, 8.
    scabricostata Guppy, Dall, 8.
    (Pleuromeris) scitula n. sp., Dall, 8.
    serricosta Heilprin, Dall, 8.
    simplex n. sp., Dall, 8.
    (Pleuromeris) tellia n. sp., Dall, 8.
    (Pleuromeris) tridentata Say, Dall, 8.
    ventricosa Gould, Arnold, 2.
    vicksburgensis n. sp., Casey, 4.
    vicksburgiana n. sp., Dall, 8.
    wilcoxensis n. sp., Dall, 8.
Venerupis Lamarck, Dall, 8.
Ventricola Rœmer, Dall, 8.
Venus Linné, Arnold, 2.
Venus (Linné), Lamarck, Dall, 8.
    campechiensis Gmelin, Dall, 8.
    campechiensis var. capax (Conrad), Glenn, 6.
    campechiensis var. cuneata (Conrad), Glenn, 6.
    campechiensis var. mortoni (Conrad), Glenn, 6.
    campechiensis var. tetrica (Conrad), Glenn, 6.
    (Chione) conradiana n. sp., Anderson, 7.
    ducateli Conrad, Glenn, 6.
    ducateli Conrad, Dall 8.
    (Chione) fluctifraga Sowerby, Arnold, 2.
    (Chione) gnidia Broderip and Sowerby, Arnold, 2.
    halidona Dall, Dall, 8.
    langdoni Dall, Dall, 8.
    mercenaria Linné, Glenn, 6.
    mercenaria var. notata Say, Dall, 8.
    (Chione) neglecta Sowerby, Arnold, 2.
    perlaminosa Conrad, Arnold, 2.
    plena Conrad, Dall, 8.
    plena Conrad, Glenn, 6.
    rileyi Conrad, Glenn, 6.
    (Chione) simillima Sowerby, Arnold, 2.
    (Chione) succincta Valenciennes, Arnold, 2.
    (Chione) temblorensis n. sp., Anderson, 7.
    tridacnoides Lamarck, Dall, 8.
Vermetus cornejoi Castillo and Aguilera?, Cragin, 2.
    graniferus (Say), Martin (G. C.), 5.
    virginicus (Conrad), Martin (G. C.), 5.
    sp., Clark and Martin, 2.
Vermipora serpuloides Hall, Shimer, 5.
    serpuloides Hall, Weller, 6.

Paleontology—Continued.
Genera and species described—Continued.
Vermispongia n. gen., Whitfield, 12.
dactyliformis n. sp., Whitfield, 12.
hamiltonensis n. sp., Whitfield, 12.
Verticordia S. Wood, Arnold, 2.
(Trigonulina) bowdenensis n. sp., Dall, 8.
(Trigonulina) cossmanni n. sp., Dall, 8.
dalliana n. sp., Aldrich, 2.
(Trigonulina) emmonsi Conrad, Dall, 8.
eocenensis Langdon (em.), Dall, 8.
(Haliris) jamaicensis n. sp., Dall, 8.
(Haliris) mississippiensis Dall, Dall, 8.
novemcostata Adams and Reeve, Arnold, 2.
quadrangularis n. sp., Aldrich, 2.
sotoensis n. sp., Aldrich, 2.
sp. indet., Dall, 8.
(Trigonulina) sp. indet., Dall, 8.
Vertigo marki n. sp., Gulick, 1.
numellata n. sp., Gulick, 1.
Viburnum hollickii n. sp., Berry, 4.
mattewanense n. sp., Berry, 7.
ovatum n. sp., Penhallow, 4.
Vicarya callosa var., Becker, 1.
semperi n. var., Becker, 1.
Villorita cyprinoides (Wood), Dall, 8.
floridana Dall, Dall, 8.
Vinella Ulrich, Ulrich and Bassler, 1.
? multiradiata n. sp., Ulrich and Bassler, 1.
radialis Ulrich, Ulrich and Bassler, 1.
radiciformis (Vine), Ulrich and Bassler, 1.
radiciformis conferta Ulrich, Ulrich and Bassler, 1.
repens Ulrich, Ulrich and Bassler, 1.
Vitiphyllum multifidum Fontaine, Fontaine, 5.
Vitrinella C. B. Adams, Arnold, 2.
williamsoni Dall, Arnold, 2.
Vitulina pustulosa Hall, Kindle, 1.
Viverravidæ, Matthew (W. D.), 10.
Viverravus Marsh, Matthew (W. D.), 1.
Viverravus Marsh, Wortman, 3.
gracilis Marsh, Wortman, 3.
minutus n. sp., Wortman, 3.
viviparus montanaensis n. sp., Stanton, 4.
Volupia Defrance, Dall, 8.
Volutilithes petrosus (Conrad), Clark and Martin, 2.
sp., Clark and Martin, 2.
Volvarina Hinds, Arnold, 2.
Volvula A. Adams, Arnold, 2.
cylindrica Carpenter, Arnold, 2.
iota (Conrad), Martin (G. C.), 5.
iota var. calverta n. var., Martin (G. C.), 5.

Paleontology—Continued.
Genera and species described—Continued.
Volvula iota var. diminuta n. var., Martin (G. C.), 5.
iota var. marylandica n. var., Martin (G. C.), 5.
iota var. patuxentia n. var., Martin (G. C.), 5.
Vulcanomya Dall, Dall, 8.
Vulpavus Marsh, Wortman, 2.
hargeri n. sp., Wortman, 2.
palustris Marsh, Wortman, 2.
Waagenoceras Gemmellaro, Smith (J. P.), 3.
cumminsi White, Smith (J. P.), 3.
hilli n. sp., Smith (J. P.), 3.
Wardia fertilis n. sp., White (D.), 17.
Washakius Leidy, Wortman, 14.
insignis Leidy, Wortman, 14.
Westonia n. subgen., Walcott, 1.
Westonia, Walcott, Matthew (G. F.), 20.
escasoni, Matthew (G. F.), 20.
Whitella canadensis n. sp., Raymond (P. E.), 7.
? siluriana n. sp., Kindle and Breger, 1.
suborbicularis n. sp., Weller, 6.
subtruncata (Hall), Weller, 6.
Whitfieldella Hall and Clarke, Grabau, 1.
cylindrica Hall, Grabau, 1.
intermedia Hall, Grabau, 1.
lævis (Whitfield), Grabau, 1.
nitida Hall, Kindle and Breger, 1.
nitida Hall 1843, Beecher, 1.
nitida Hall, Clarke and Ruedemann, 1.
cf. nitida Hall, Grabau, 9.
nitida Hall, Grabau, 1.
nitida var. oblata Hall, Grabau, 1.
nucleolata (Hall), Weller, 6.
oblata Hall, Grabau, 1.
sulcata (Vanuxem), Grabau, 1.
Whittleseya Newbury 1853, White (D.), 4.
brevifolia n. sp., White (D.), 4.
dawsoniana n. sp., White (D.), 4.
desiderata n. sp., White (D.), 4.
Williamsonia? bibbinsi Ward n. sp., Fontaine, 5.
? gallinacea n. sp., Ward, Fontaine, 5.
oregonensis n. sp., Fontaine, 1.
? sp., Fontaine, 1.
Wilsonia globosa n. sp., Decker, 6.
Wilsonia saffordi Hall, Kindle and Breger, 1.
Worthenia? lasallensis Worthen?, Girty, 3.
? marcouiana Geinitz?, Girty, 3.
mississippiensis (W. & W.), Weller, 2.
tabulata Conrad?, Girty, 3.
? sp., Girty, 3.
Xenaphora zitteli n. sp., Weaver, 1.

Paleontology—Continued.
- *Genera and species described—*Continued.
  - Xenaspis Waagen, Hyatt and Smith, 1.
    - marcoui n. sp., Hyatt and Smith, 1.
  - Xenodiscus Waagen, Hyatt and Smith, 1.
    - bittneri n. sp., Hyatt and Smith, 1.
  - Xenophora conchyliophora (Born), Martin (G. C.), 5.
  - Xenotherium unicum n. gen. and sp., Douglass, 9.
  - Xiphactinus Leidy, Stewart, 1.
    - audax (Cope), Stewart, 1.
    - brachygnathus Stewart, Stewart, 1.
    - lowii Stewart, Stewart, 1.
  - Xiphias? radiata (Clark), Eastman, 1.
  - Xiphopeza E. Hitchcock, Lull, 2.
    - triplex E. Hitchcock, Lull, 2.
  - Xylophomya n. gen., Whitfield, 4.
    - laramiensis n. sp., Whitfield, 4.
  - Yoldia Möller, Arnold, 2.
    - breweri n. sp., Dall, 10.
    - cooperi Gabb, Arnold, 2.
    - diminutiva n. sp., Whiteaves 12.
    - emersonii n. sp., Dall, 10.
    - glabra Beede and Rogers, Beede, 1.
    - lævis (Say), Glenn, 6.
    - knoxensis (McChesney) ?, Beede, 1.
    - palachei n. sp., Dall, 10.
    - scissurata Dall, Arnold, 2.
    - subscitula (Meek and Hayden), Beede, 1.
  - Yuccites hettagensis Saporta?, Fontaine, 1.
  - Zacanthoides (Olenoides) spinosus Walcott, Woodward (H.), 1.
  - Zamia washingtoniana Ward, Fontaine, 5.
  - Zamiopsis insignis Fontaine, Fontaine, 5.
  - Zamites arcticus Göppert, Fontaine, 3, 4.
    - tenuinervis Fontaine, Fontaine, 3.
  - Zaphrentis Rafinesque, Grabau, 1.
  - Zaphrentis Rafinesque and Clifford, Lambe, 2.
    - affinis Billings, Lambe, 2.
    - albacornis n. sp., Greene, 13.
    - albus n. sp., Greene, 1.
    - alveolatus n. sp., Greene, 13.
    - amplexiformis n. sp., Greene, 5.
    - caliculus n. sp., Greene, 15.
    - callosus n. sp., Greene, 15.
    - cassedayi Milne Edwards, Greene, 13.
    - cingulosa Billings, Lambe, 2.
    - clinatus n. sp., Greene, 14.
    - compressa Milne Edwards, Greene, 13.
    - curtus n. sp., Greene, 1.
    - gibsoni White, Girty, 3.
    - gigantea Lesueur (sp.), Lambe, 2.
    - halli E. &. H., Greene, 13.
    - incondita Billings, Lambe, 2.
    - inflexus n. sp., Greene, 1.
    - insolens n. sp., Greene, 1.

Paleontology—Continued.
- *Genera and species described—*Continued.
  - Zaphrentis intortus n. sp., Greene, 13.
    - invaginatus n. sp., Greene, 13.
    - lamasteri n. sp., Greene, 1.
    - minas Dawson, Lambe, 2.
    - mirabilis Billings (sp.), Lambe, 2.
    - neptun n. sp., Herzer, 5.
    - obcurus n. sp., Greene, 2.
    - patens Billings, Lambe, 2.
    - prolixus n. sp., Greene, 11.
    - pusillus n. sp., Greene, 1.
    - cf. racinensis Whitfield, Clarke and Ruedemann, 1.
    - roemeri E. & H.?, Weller, 6.
    - shumardi Milne Edwards and Haime (sp.), Lambe, 2.
    - stokesi Milne Edwards and Haime, Lambe, 2.
    - strigatus n. sp., Greene, 13.
    - subcentralis n. sp., Greene, 14.
    - tantilla Miller, Girty, 3.
    - trisinuatus n. sp., Greene, 8.
    - turbinati (Hall), Grabau, 1.
    - weberi n. sp., Greene, 7.
    - sp., Girty, 3.
    - sp. undet., Weller, 6.
  - Zaphsalis abradus Cope, Stanton and Hatcher, 1.
  - Zarhachis flagellator Cope, Case, 9.
    - tysonii Cope, Case, 9.
  - Zatrachis, Broili, 2.
  - Zatrachys crucifer n. sp., Case, 5.
  - Zeacrinus commaticus Miller, Grabau, 8.
    - ? robustus Beede, Beede, 1.
  - Zeuglodon (Basilosaurus), Lucas (F. A.), 20.
  - Ziphacodon rugatus Marsh, Wortman, 4.
  - Zirphæa Leach, Arnold, 2.
    - gabbii Tryon, Arnold, 2.
  - Zizyphus elegans Hollick, Hollick, 11.
  - Zonitoides bristoli n. sp., Gulick, 1.
  - Zygospira, Beecher, 1.
    - aquila n. sp., Sardeson, 9.
    - nicolleti (W. & S.), Weller, 6.
    - recurvirostra (Hall), Weller, 6.
    - recurvirostris Hall, Ruedemann, 2.

Panama.
- Current notes on physiography, Davis (W. M.), 33.
- Geology of Isthmus of Panama, Edwards (H. W.), 1.
- Geology of the Isthmus of Panama, Hershey, 5.
- Manganese industry of Panama, Williams (E. G.), 1.
- Pleistocene Foraminifera from Panama, Cushman, 2.

Pennsylvania.
- Accounting for the depth of the Wyoming buried valley, Lyman, 1.
- Age of the coals at Tipton, White (D.), 2.

Pennsylvania—Continued.
Alleged Parker channel, Williams (E. H.), 1.
Anthracite coal fields, Storrs (A. H.), 1.
Anthracite coal near Perkiomen Creek, Carter (O. S. C.), 2.
Anticlinal folds, Hopkins and Smallwood, 1.
Barite in Pennsylvania, Stose, 2.
Barnesboro-Patton field, Burrows, 1.
Basal conglomerate in Lehigh and Northhampton counties, Peck, 2, 3.
Beaver folio, Pennsylvania, Woolsey, 3.
Bituminous coal field of Pennsylvania, White and Campbell, 1.
Brownsville-Connellsville folio, Campbell (M. R.), 8.
Buried valley of Wyoming, Corss, 1.
Buried valley of Wyoming, Griffith, 1.
Carboniferous of the Appalachian basin, Stevenson (J. J.), 6.
Catskill rocks in northern Pennsylvania, Fuller (M. L.), 4.
Caves of Huntingdon County, Morganroth, 1.
Cement belt in Lehigh and Northampton counties, Peck, 5.
Cement materials and industry of the United States, Eckel, 34.
Cement-rock deposits of the Lehigh district, Eckel, 26.
Charbons gras de la Pennsylvanie et de la Virginie occidentale, Heurteau, 1.
Clays of Great Valley and South Mountain areas, Hopkins (T. C.), 4.
Clays of Pennsylvania, Woolsey, 1.
Clays of southeastern Pennsylvania, Hopkins (T. C.), 1.
Clays of the United States, Ries, 6.
Clays of upper Ohio and Beaver River region, Hice, 2.
Coal Measures of bituminous regions, Adams (T. K.), 1.
Coal Measures of central Pennsylvania, Fluck, 1.
Coal mining in the Wilmore basin, Butts, 3.
Composition of petroleum, Mabery, 2.
Connellsville region mineral resources, Eavenson, 1.
Contributions to Devonian paleontology, Williams and Kindle, 1.
Contributions to mineralogy, Eyerman, 1.
Correlation of Piedmont formations, Mathews, 6.
Current notes on physiography, Davis (W. M.), 41.
Deposition of Appalachian Pottsville, White (D.), 15.
Description of four meteorites, Ward (H. A.), 3.
Ebensburg folio, Pennsylvania, Butts, 7.
Elders Ridge coal field, Stone (R. W.), 1, 7.
Elkland-Tioga folio, Fuller and Alden, 2.
Extra-morainic pebbles in Pennsylvania, Woolsey, 2.
Gaines folio, Fuller and Alden, 1.
Gaines oil field, Fuller (M. L.), 3.
Geographic development of northern Pennsylvania and southern New York, Campbell (M. R.), 9.
Geological excursion in Pittsburg region, Grant (U. S.), 4.
Geology of Pittsburg district, White (I. C.), 6.
Gisements de minerais de zinc, Demaret, 1.
Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.
Glacial gravels of the Kittanning quadrangle, Leverett, 10.
Graphite and garnet, Hopkins (T. C.), 3.
Hyner gas pool, Fuller (M. L.), 9.
Indiana folio, Richardson (G. B.), 3.
Kansas glaciation and its effects on the river system of northern Pennsylvania, Williams (E. H.), 2.
Kittanning folio, Butts, 4.
Latrobe folio, Campbell (M. R.), 18.
Limestones of southwestern Pennsylvania, Clapp, 4.
Lodel Creek and Skippack Creek, Lyman, 2.
Lower Carboniferous of Appalachian basin, Stevenson (J. J.), 2, 4.
Masontown-Uniontown folio, Campbell (M. R.), 6.
Mauch Chunk of Pennsylvania, Stevenson (J. J.), 1.
Meteoreisen-Studien, Cohen, 4.
Meteoreisen von Millers Run bei Pittsburg, Cohen, 7.
Mineral resources of Elders Ridge quadrangle, Stone (R. W.), 8.
Misnamed Indiana anticline, Richardson (G. B.), 1.
New species of Olenellus, Wanner, 1.
New Xiphosuran from Upper Devonian of Pennsylvania, Beecher, 5.
Northward flow of ancient Beaver River, Hice, 1.
Occurrence of serpentine and talc, Peck, 1.
Oil and gas fields of Greene County, Stone (R. W.), 2.
Oil and gas in the vicinity of Philadelphia, Carter (O. S. C.), 3.
On spangolite, Penfield, 3.
Ordovician section near Bellefonte, Collie, 3.
Origin of anticlinal folds near Meadville, Smallwood and Hopkins, 1.
Original southern limit of Pennsylvania anthracite beds, Lyman, 4.
Pennsylvania anthracite coal field, Stoek, 1.

Pennsylvania—Continued.
- Petroleum industry of Europe and America, Otsuka, 1.
- Physiographic features of the Susquehanna basin, Hollister, 1.
- Physiographic studies in southern Pennsylvania, Stose, 3.
- Piedmont district of Pennsylvania, Bascom, 3.
- Pittsburg coal in the Burgettstown quadrangle, Griswold, 3.
- Pocono rocks in the Allegheny Valley, Campbell (M. R.), 14.
- Recent geological work in western Pennsylvania, Campbell (M. R.), 3, 7.
- Recent structural work in western Pennsylvania, Butts, 2.
- Recent work in bituminous coal field of Pennsylvania, Campbell (M. R.), 11.
- Revision of Phyllocarida from Chemung and Waverly groups of Pennsylvania, Beecher, 8.
- Road-making materials of Pennsylvania, Ihlseng, 1.
- Rural Valley folio, Butts, 6.
- Serpentines of Philadelphia, Jonas, 1.
- Shifting of faunas, Williams (H. S.), 4.
- Slate industry at Slatington, Dale, 2.
- Slate investigations during 1904, Dale, 8.
- Steinkohlengebiete von Pennsylvanien und Westvirginien, Simmersbach, 1.
- Structure of South Mountain, Stose, 1.
- Topography and travel in Pennsylvania, Tower, 2.
- Troost's survey of Philadelphia, Hamilton (S. H.), 1.
- Underground waters of Pennsylvania, Fuller (M. L.), 23.
- Upper Paleozoic rocks of Ohio and Pennsylvania, Girty, 10.
- Water resources of Chambersburg and Mercersburg quadrangles, Stose, 4.
- Water resources of Elders Ridge quadrangle, Stone (R. W.), 3.
- Water resources of the Curwensville, Patton, Ebensburg, and Barnesboro quadrangles, Clapp, 3.
- Water resources of the Pawpaw and Hancock quadrangles, Stose and Martin, 1.
- Water resources of the Philadelphia district, Bascom, 2.
- Water resources of the Waynesburg quadrangle, Stone (R. W.), 4.
- Water supply for Philadelphia, Carter (O. S. C.), 1.
- Waynesburg folio, Stone (R. W.), 6.

Petrology.
- *Alaska.*
  - Alaska-Treadwell mine, Palache, 2.
  - Geology about Chichagof Cove, Palache, 3.
  - Reconnaissance of northwestern portion of Seward Peninsula, Collier, 1.

Petrology—Continued.
- *Alaska*—Continued.
  - Rocks and minerals of south Alaska, Novarese, 1.
  - Stratigraphy and igneous rocks of Alaska, Emerson (B. K.), 6.
  - Tin deposits of the York region, Collier, 8.
- *Arizona.*
  - Bisbee folio, Ransome, 14.
  - Bradshaw Mountains folio, Jaggar and Palache, 1.
  - Clinton folio, Lindgren, 28.
  - Conglomerate dikes in southern Arizona, Campbell (M. R.), 15.
  - Copper deposits of Clinton-Morenci district, Lindgren, 29.
  - Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
  - Geology of Fort Apache region, Reagan, 3.
  - Geology of Globe copper district, Ransome, 6.
  - Globe folio, Ransome, 13.
  - Petrography of the Tucson Mountains, Guild, 1.
  - Reformed copper ores, Goodwin, 1.
- *Arkansas.*
  - Magmatic differentiation of rocks, Keyes, 27.
  - Zinc and lead deposits of north Arkansas, Branner, 2.
- *California.*
  - Berkeley Hills, Lawson and Palache, 1.
  - California feldspar-corundum rocks from Plumas County, Lawson (A. C.), 1.
  - Clastic dikes, Newsom, 4.
  - Copper in northern California, Diller, 6.
  - Crystalline rocks of the San Gabriel Mountains, Arnold and Strong, 1.
  - Eclogites in California, Holway, 1.
  - Geological section of the Coast ranges, Osmont, 1.
  - Geology of Mineral King, Knopf and Thelen, 1.
  - Geomorphogeny of Kern basin, Lawson (A. C.), 10.
  - Glaucophane and associated schists in the Coast ranges, Nutter and Barber, 1.
  - Igneous rocks near Pajaro, Reid (J. A.), 1.
  - Klamath Mountain section, Diller, 12.
  - Miocene diabase of the Santa Cruz Mountains, Haehl and Arnold, 1.
  - Orbicular gabbro at Dehesa, Lawson (A. C.), 11.
  - Orbicular gabbro from San Diego County, Lawson (A. C.), 7.
  - Orbicular gabbro of Dehesa, Kessler and Hamilton, 1.
  - Pegmatyte veins of Pala, Waring, 2.
  - Physiographic features of Klamath Mountains, Anderson (F. M.), 2.
  - Plumasite, Lawson (A. C.), 8.

Petrology—Continued.
California—Continued.
Roofing slate of igneous origin, Eckel, 27.
San Luis folio, Fairbanks, 7.
Variability in rock magma, Turner, 8.
Canada.
Abitibi region, Kay, 1.
Amygdaloidal trap rock, Dresser, 3.
Archæan rocks of Ottawa Valley, Osann, 2.
Areas of nepheline-syenite, Miller (W. G.), 1.
Atlin mining district, Gwillim, 1.
Boundary Creek district, Brock, 3.
Canadian Rockies. Part II; On some rock-specimens, Bonney, 2.
Characteristics of Atlin gold field, Gwillim, 2.
Copper-bearing rocks in Quebec, Dresser, 7.
Descriptions of rocks collected in 1900, Barlow, 1.
Explorations in Abitibi, McMillan, 1.
Geology and petrography of Shefford Mountain, Dresser, 9.
Geology of Brome Mountain, Dresser, 11.
Geology of Michipicoten Island, Burwash, 1.
Geology of Rigaud Mountain, Le Roy, 1.
Geology of St. Helens Island, Nolan and Dixon, 1.
Geology of the International Boundary, Daly, 10.
Geology of western part of International Boundary, Daly, 13.
Geology of Yamaska Mountain, Young, 1.
Hornblende lamprophyre dike at Richmond, Dresser, 2.
Huronian of Moose River basin, Parks, 1.
Iron-ore deposits along Kingston and Pembroke Railway in eastern Ontario, Ingall, 4.
Iron ranges of Michipicoten west, Bell (J. M.), 3.
Iron ranges of northwestern Ontario, Coleman, 12.
Iron ranges of the Lower Huronian, Coleman, 4.
Lake Temiscaming to Height of Land, Miller (W. G.), 5.
Lamprophyres of the Rossland mining district, Barber, 1.
Laurentian limestones and granite of Haliburton County, Graton, 1.
Michipicoten iron ranges, Coleman and Willmott, 2.
Michipicoten iron region, Coleman and Willmott, 1.
Microscopic examination of sections of rocks, Barlow, 2.
Mining in the Rossland district, Campbell (C. M.), 1.
Monteregian Hills, Adams (F. D.), 7.

Petrology—Continued.
Canada—Continued.
Nepheline and other syenites near Port Coldwell, Ontario, Coleman, 8.
Nepheline rock from Ontario, Adams (F. D.), 8.
Nepheline rocks of Ice River, Barlow, 4.
Nepheline syenite in western Ontario, Miller (W. G.), 7.
Nickel and copper deposits of Sudbury, Barlow, 8.
Notes on geology and ore deposits of southeastern British Columbia, Corless, 2.
Notes on specimens collected in the Canadian Rocky Mountains, Bonney, 3.
Ore deposits of Boundary Creek district, Brock, 2.
Ore deposits of Copper Mountain, Scott (O. N.), 1.
Origin of veins in asbestiform serpentine, Merrill (G. P.), 14.
Petrographical contribution to geology of Quebec, Dresser, 6.
Petrography of Kettle River mining division, Silver, 2.
Petrography of Mount Orford, Dresser, 4.
Petrography of rock samples from British Columbia, Robertson, 4.
Petrography of Sheffield and Brome Mountains, Dresser, 8.
Petrography of Shefford Mountain, Dresser, 5.
Pyroxenites of the Grenville series in Ottawa County, Canada, Gordon (C. H.), 5.
Report of section of chemistry and mineralogy, Hoffmann, 1.
Round Lake to Abitibi River, Bolton, 1.
Secondary origin of certain granites, Daly, 11.
Stratigraphy and igneous rocks of Alaska, Emerson (B. K.), 6.
Sudbury district, Barlow, 3.
Sudbury mining district, Barlow, 6.
Sulphide ore bodies of Sudbury region, Silver, 1.
Syenites near Port Coldwell, Coleman, 13.
Up and down the Mississaga, Graton, 2.
Varieties of serpentine in southeastern Quebec, Dresser, 16.
Volcanic rocks of New Brunswick, Bailey (L. W.), 10.
Colorado.
Andesite of Mount Sugar Loaf, Hogarty, 1.
Basaltic zones as guides to ore deposition, Stevens (E. A.), 2.
Garnetiferous bed in Golden Gate Canyon, Bailey, Rath, and Grider, 1.
Granite of West Sugar Loaf Mountain, Henry, 1.

Petrology—Continued.
Colorado—Continued.
- Greenstone schists in the San Juan Mountains, Howe, 3.
- La Plata folio, Cross and Spencer, 1.
- Mica andesite of west Sugar Loaf Mountain, Blake (J. C.), 1.
- Nodular-bearing schists near Pearl, Read, 2.
- Occurrence of limburgite, Stevens (E. A.), 1.
- Olivinite dike of Magnolia district, Whitaker, 1.
- Ore deposits of Rico Mountains, Ransome, 3.
- Report State Bureau of Mines, Lee (H. A.), 1.
- Silverton folio, Cross and Howe, 1.
- Spanish peaks folio, Hills, 1.
- Sunset trachyte, Breed, 1.
- Tellurium veins in La Plata Mountains, Austin, 1.

Connecticut.
- Newark system of the Pomperaug Valley, Hobbs, 2.
- Tungsten mine at Trumbull, Hobbs, 5.

District of Columbia.
- Washington folio, Darton and Keith, 1.

Georgia.
- Aplite, pegmatite, and tourmaline bunches in Stone Mountain granite, Watson (T. L.), 5.
- Granites and gneisses of Georgia, Watson (T. L.), 8.
- Granitic rocks of Georgia, Watson (T. L.), 1.
- Origin of the phenocrysts in porphyritic granites, Watson (T. L.), 3.
- Sandstone dikes near Columbus, McCallie, 6.
- Trap dikes of Georgia, McCallie, 1.
- Weathering of granitic rocks, Watson (T. L.), 4.

Greenland.
- Eisenführenden Gesteinen der Insel Disko, Nicolau, 1.
- Mineralogisk resa i Syd Groenland, Flink, 1.
- Mineralogisk-petrografiske undersœgelser af Grœnlandske nefelinsyeniter og beslægtede bjærgarter, Ussing, 1.
- Petrographie Nord-Grönlands, Belowsky, 1.
- Rocks and minerals from north Greenland and Frobisher Bay, Emerson (B. K.), 8.
- Rocks from east coast of Greenland, Nordenskjöld, 1.
- Rocks of Nugsuaks Peninsula, Phalen, 1.

Guatemala.
- Alta Verapaz, Sapper, 3.
- Asche des Vulkans Sta. Maria, Brauns, 1, 2.
- Cendres d'un volcan près du Santa Maria, Ordoñez, 5.

Petrology—Continued.
Guatemala—Continued.
- Produkte des Ausbruchs am S. Maria, Bergeat, 3.
- Produkte Vulkan S. Maria, Bergeat, 2.

Hawaiian Islands.
- Trachyte in Hawaii, Cross (W.), 6.

Idaho.
- Geological reconnaissance across the Bitterroot Range and Clearwater Mountains, Lindgren, 21.
- Geology and water resources of Nez Perces County, Russell, 2.
- Geology and water resources of Snake River Plains, Russell, 5.
- Geology of Idaho and Oregon, Russell, 8.

Iowa.
- Analysis of dolomite rock, Knight (N.), 6.
- Dolomites of eastern Iowa, Knight (N.), 5.
- Iowa dolomite, Knight (N.), 1.

Kentucky.
- Lead, zinc, and fluorspar deposits of western Kentucky, Ulrich, 8.

Maine.
- Andesites of the Aroostook volcanic area, Gregory (H. E.), 1.
- Geological study of the Fox Islands, Smith (G. O.), 2.

Maryland.
- Basic rocks of northeastern Maryland, Leonard, 1.
- Geology of crystalline rocks of Cecil County, Bascom, 1.
- Structure of the Peidmont Plauteau, Mathews, 5.

Massachusetts.
- Alkalisyenit von Beverly, Wright (F. E.), 3.
- Calcite-prehnite cement rock from the Holyoke Range, Emerson (B. K.), 6.
- Geology of the Weston aqueduct, Crosby, 12.
- Geology of Worcester, Mass., Perry and Emerson, 1.
- Holyokeite from the Trias of Massachusetts, Emerson (B. K.), 3.
- Igneous rocks of Neponset Valley, Crosby, 15.
- Medford dike area, Wilson (A. W. G.), 1.
- Physical geography, etc., of Essex County, Mass., Sears, 1.
- Plumose diabase and palagonite from Holyoke trap sheet, Emerson (B. K.), 9.
- Rocks of the Weston aqueduct, Warren, 2.
- Structural relations of amygdaloidal melaphyre, Burr, 1.

Mexico.
- Análisis y clasificación de granate, Villarello, 7.
- Copper deposits at San Jose, Kemp, 32.

Petrology—Continued.
Mexico—Continued.
  Criadero de fierro del Cerro de Mercado, Durango, Rangel, 1.
  Criaderos de fierro de la hacienda de Vaquerias, Villarello and Böse, 1.
  Geology of nepheline syenite area at San José, Tamaulipas, Finlay (G. I.), 7.
  Geology of San Pedro district, Finlay (G. I.), 5.
  Geology of the San José district, Finlay (G. I.), 8.
  Geology of western Mexico, Farrington, 13.
  In San Cristobal gefallene Asche, Schottler, 1.
  Nauhcampatepetl ó Cofre de Perote, Ordoñez, 18.
  Natürlicher Koks in den Santa Clara Kohlenfeldern, Sonora, Ochsenius, 1.
  Profil durch den Ostabfall der Sierra Madre Oriental, Böse, 2.
  Rhyolitas, Ordoñez, 1.
  Rocas de Chiapas y Tabasco, Ordoñez, 14.
  Roche basaltique de la Sierra Verde, Kroustchoff, 1.
  Section across the Sierra Madre Occidental of Chihuahua and Sinaloa, Weed, 9.
  Vulkanische Asche, Schmidt, 1.
  Xinantacatl ou volcan Nevado de Toluca, Ordoñez, 7.

Michigan.
  Geological cross sections of Keweenaw Point, Hubbard (L. L.), 1.
  Menominee district of Michigan, Bayley, 1.
  Notes on rocks and minerals of Michigan, Wright (F. E.), 6.
  Tamarack Mine cross section, Lane, 45.

Minnesota.
  Dalles of the St. Croix, Berkey, 1.
  Étude mineralogique et petrographique des roches gabbroiques de l'État de Minnesota, Winchell (A. N.), 1.
  Keeweenawan area of eastern Minnesota, Hall (C. W.), 3.
  Keewatin area of eastern and central Minnesota, Hall (C. W.), 4.
  Mesabi iron-bearing district of Minnesota, Leith, 4.
  New iron-bearing horizon in Keewatin in Minnesota, Winchell (N. H.), 1.
  Origin and development of iron ores of Mesabi and Gogebic iron ranges, Leith, 8.
  Secondary origin of certain granites, Daly, 11.
  Spherulitic texture in the Archean greenstones of Minnesota, Clements, 6.
  Vermilion iron-bearing district of Minnesota, Clements, 3.

Petrology—Continued.
Missouri.
  Lead and zinc deposits of Mississippi Valley, Keyes, 20.

Montana.
  Geological reconnaissance across the Bitterroot Range and Clearwater Mountains, Lindgren, 21.
  Geology and ore deposits of Elkhorn mining district, Weed, 5.
  Igneous rocks of Algonkian series, Finlay (G. I.), 4.
  Igneous rocks of Highwood Mountains, Pirsson, 4.
  Microscopical petrography of Elkhorn mining district, Barrell, 1.
  Missourite, a new leucite rock, Weed and Pirrson, 2.
  Petrographic province of central Montana, Pirrson, 5.
  Petrography of Square Butte, Pirrson, 3.
  Petrography of Yogo peak, Pirsson, 1.
  Shonkin Sag and Palisade Butte laccoliths in the Highwood Mountains, Weed and Pirsson, 1.

Nevada.
  Geology of region of Walker River, Smith (D. T.), 2.
  Geology of the Tonopah mining district, Spurr, 29.

Newfoundland.
  Variolitic pillow lava, Daly, 9.

New Hampshire.
  Albany granite and its contact phenomena, Hawes, 2.
  Composition of labradorite rocks, Dana, 1.
  Eruptive rocks in Campton, Hawes, 1.
  Geology of Littleton, Hitchcock (C. H.), 10.
  Geology of Monadnock Mountain, Perry, 2.
  Geology of Mount Kearsarge, Perry, 1.
  Geology of the Belknap Mountains, Pirsson and Washington, 1.
  Rocks of Lake Winnepesaukee, Washington, 3.

New Jersey.
  Glauconite, Prather, 3.
  Leucite-tinguaite from Beemerville, Wolff, 1.
  Serpentines of Manhattan Island, Newland, 1.

New Mexico.
  Analcite-bearing camptonite from New Mexico, Ogilvie, 2.
  Geology of Cerillos Hills, Johnson (D. W.), 6.

New York.
  Adirondack augite-andesite, Cushing, 1.
  Eruptive dikes in Syracuse, Schneider, 4.
  Exposure of serpentine at Syracuse, Kraus, 1.

Petrology—Continued.

New York—Continued.

Field work in town of Minerva, Finlay (G. I.), 2.
Genesis of amphibole schists and serpentines of Manhattan Island, Julien, 7.
Geological history of the hematite iron ores of Antwerp and Fowler belt in New York, Crosby, 3.
Geology of Adirondack region, Cushing, 10.
Geology of Paradox Lake quadrangle, Ogilvie, 6.
Geology of Rand Hill, Cushing, 2.
Geology of the city of New York, Gratacap, 7.
Geology of the Hudson Valley, Dale, 5.
Geology of the serpentines of central New York, Schneider, 6.
Geology of the vicinity of Little Falls, Cushing, 9.
Northumberland volcanic plug, Woodworth, 7.
Peridotite dikes near Ithaca, Matson, 2.
Petrography and age of the Northumberland rock, Cushing, 7.
Petrography of dikes in Syracuse, Smyth (C. H.), 2.
Pre-Cambrian outlier at Little Falls, Herkimer County, Cushing, 4.
Recent geologic work in Franklin and St. Lawrence counties, Cushing, 3.
Rossie lead veins, Smyth (C. H.), 4.
Serpentines of Manhattan Island, Newland, 1.

North Carolina.

Copper-bearing rocks of Virgilina copper district, Watson (T. L.), 6.
Corundum of North Carolina, Pratt and Lewis, 1.
Granites of North Carolina, Watson (T. L.), 13, 16.
Leopardite, Watson (T. L.), 14.
Orbicular gabbro-diorite from Davie County, Watson (T. L.), 15.

Ohio.

Ohio bowlders containing huronite, Wright (A. A.), 2.

Oklahoma.

Geology of the Wichita Mountains, Gould, 13.

Oregon.

Contribution to petrography of John Day Basin, Calkins, 1.
Coos Bay folio, Diller, 4.
Eclogites in California, Holway, 1.
Geology and petrography of Crater Lake National Park, Diller and Patton, 1.
Gold belt of Blue Mountains, Lindgren, 4.
Mesozoic of southwestern Oregon, Louderback, 6.
Port Orford folio, Diller, 11.

Petrology—Continued.

Pennsylvania.

Occurrence of serpentine and talc, Peck, 1.
Piedmont district of Pennsylvania, Bascom, 3.
Road-making materials of Pennsylvania, Ihlseng, 1.
Serpentines of Philadelphia, Jonas, 1.

Philippine Islands.

Volcanoes and seismic centers of the Philippine Archipelago, Maso, 1.

South Dakota.

Deposits of wolframite in the Black Hills, Irving, 1.
Igneous rocks of the Sundance folio, Smith (W. S. T.), 5.
Newly discovered rock at Sioux Falls, Todd (J. E.), 8, 12.
Sundance folio, Darton, 26.

Tennessee.

Deposits of copper ores at Ducktown, Kemp, 10.
Erratic bowlder from the Coal Measures of Tennessee, McCallie, 5.

Texas.

Geologie und Petrographie der Apache Mountains, Osann, 1.
Quartz-feldspar-porphyry from Llano, Iddings, 3.

Utah.

Geology of Bingham Cañon, Kemp, 23.
Mineral crest, Jenney, 2.

Vermont.

Geology of Ascutney Mountain, Daly, 7.
Granite of Barre, Finlay (G. I.), 1.
Granite area of Barre, Finlay (G. I.), 2.
Petrographic description of dikes of Grand Isle, Shimer, 1.
Petrography of Belvidere Mountain deposits, Marsters, 3.
Serpentine belt of Lamoille and Orleans counties, Marsters, 2.
Structural details in Green Mountain region, Dale, 1.
Terranes of Orange County, Richardson (C. H.), 2.

Virginia.

Copper-bearing rocks of Virgilina copper district, Watson (T. L.), 6.
Occurrence of unakite, Phalen, 2.

Washington.

Building and ornamental stones of Washington, Shedd, 2.
Clealum iron ores, Smith and Willis, 1.
Geological reconnaissance across the Cascade Range, Smith and Calkins, 1.
Geology and water resources of Yakima County, Smith (G. O.), 3.
Geology of Mount Rainier, Smith (G. O.), 1.
Ore deposits of Monte Cristo, Spurr, 3.
Pseudoserpentine from Stevens County, Clarke (F. W.), 2, 5.

Petrology—Continued.
West Indies.
Cendres des éruptions de la Montagne Pelée, Lacroix, 2.
Composition chimique des poussières volcaniques de la Martinique, Gillot, 1.
Composition des cendres projetées par la Montagne Pelée, Michel-Lévy, 2.
Cordiérite dans les produits éruptifs de la Montagne Pelée, Lacroix, 17.
Dust from Soufrière, Bonney, 5.
Enclaves basiques des volcans de la Martinique, Lacroix, 18.
Enclaves des andésites de Montagne Pelée, Lacroix, 6.
Examination of ash that fell on Barbados after eruption of St. Vincent, Flett, 1.
History of the Caribbean Islands, Frazer, 8.
Massive-solid volcanic eruptions, Russell, 13.
Montagne Pelée et ses éruptions, Lacroix, 20.
Observations minéralogiques faites sur les products de l'incendie de Saint-Pierre, Lacroix, 10.
Recent tuffs of the Soufrière, Howe (E.), 2.
Roches volcaniques de la Martinique, Lacroix, 1, 3.
Volcanic dust, Falconer, 1.
Volcanic dust and sand from St. Vincent, Diller and Steiger, 1.
Volcanic dust from West Indies, Porter (F. B.), 1.
Volcanic rocks of Martinique and St. Vincent, Diller, 7.
Vulcanische Asche vom Volcan Soufrière, Klein, 1.
Vulcanischen Kleinen Antillen und die Ausbrüche der Jahre 1902 und 1903, Sapper, 19.
Wisconsin.
Baraboo iron-bearing district of Wisconsin, Weidman, 5.
Dalles of the St. Croix, Berkey, 1.
Occurrence of fayalite in Wisconsin, Weidman, 4.
Wyoming.
Aladdin folio, Darton and O'Harra, 1.
Copper deposits of the Encampment district, Spencer (A. C.), 10.
Igneous rocks of the Aladdin quadrangle, Smith (W. S. T.), 6.
Igneous rocks of the Sundance folio, Smith (W. S. T.), 5.
Leucite hills of Wyoming, Kemp and Knight, 1.
Spherulites of the Yellowstone and Great Britain, Parkinson, 1.
Sundance folio, Darton, 26.
General.
Analysis of igneous rocks, Washington, 9.
Analysis of rocks, Clarke (F. W.), 4.

Petrology—Continued.
General—Continued.
Beziehungen zwischen der Petrographie und angrenzenden Wissenschaften, Zirkel, 1.
Bibliography and index of North American geology, paleontology, petrology, and mineralogy, Weeks, 6, 7, 10, 15.
Bibliography of North American geology, paleontology, petrology, and mineralogy for 1892–1900, Weeks, 3.
Calculation of center points in the quantitative classification of igneous rocks, Washington, 7.
Character and genesis of certain contact deposits, Lindgren, 5.
Chemical analyses of igneous rocks, Washington, 6.
Chemical composition of igneous rocks expressed by diagrams, Iddings, 1.
Chemical study of the glaucophane schists, Washington, 4.
Classification of sedimentary rocks, Grabau, 15.
Coarseness of igneous rocks, Lane, 37.
Concentration of barium in limestone, Dickson, 2.
Derivation of rock name "anorthosite," Cushing, 5.
Determination of feldspars in thin section, Spurr, 7.
Differential thermal conductivities of certain schists, Thelen, 1.
Ellipsoidal structure in pre-Cambrian basin and intermediate rocks of Lake Superior region, Clements, 1.
Eutectics in rock magmas, Lane, 32.
Fall excursions of the Geological Department, Columbia University, Shimer, 2.
Formation of bonanzas in upper portions of gold veins, Rickard (T. A.), 3.
Foyaite-ijolite series of Magnet Cove, Washington, 1.
Foyaite-ijolite series of Magnet Cove, II, Washington, 2.
Genesis of certain cherts, Keyes, 35.
Genesis of riebeckite, Murgoci, 1.
Geological relations and distribution of platinum and associated metals, Kemp, 10.
Geophysical investigations suggested, Adams (F. D.), 9.
Gold production of North America, Lindgren, 6.
Grain of igneous intrusives, Lane, 22.
Granite, Winchell (N. H.), 18.
Handbook of rocks, Kemp, 29.
Igneous rocks and circulating waters as factors in ore deposition, Kemp, 12.
Igneous rocks from eastern Siberia, Washington, 5.
Igneous rocks: How to identify them, O'Brien (C. J.), 1.

Petrology—Continued.
General—Continued.
Index to North American geology, paleontology, petrology, and mineralogy for 1892–1900, Weeks, 4.
Influence of country rock on mineral veins, Weed, 6.
Isomorphism and thermal properties of the feldspars, Day and Allen, 1.
Magmatic differentiation of rocks, Keyes, 27.
Manual of the chemical analysis of roks, Washington, 10.
Mechanics of igneous intrusion, Daly, 8.
Metamorphism of the Laurentian limestones of Canada, Winchell (N. H.), 17.
Metasomatic processes in fissure veins, Lindgren. 1.
Method of petrographic analysis, Derr, 1.
Methods for determining percentages of components of an igneous rock, Williams (I. A.), 2.
Microscopic-petrographical methods, Wright (F. E.), 2.
Mineral analyses, Clarke (F. W.), 1.
Minerals in rock sections, Luquer, 4.
New combination wedge for use with petrographical microscope, Wright (F. E.), 1.
Nitrates in cave earths, Nichols (H. W.), 1.
Ores deposited by underground waters, Maclaren, 1.
Origin and classification of gneisses, Gordon (C. H.), 1.
Outline of elementary lithology, Barton, 1.
Paleozoic coral reefs, Grabau, 10.
Paramorphic alternation of pyroxene to hornblende, Gordon (C. H.), 4.
Perknite (lime-magnesia rocks), Turner, 2.
Plumose diabase containing sideromelan and spherulites of calcite and blue quartz, Emerson (B. K.), 5.
Porphyritic appearance of rocks, Lane, 23.
Practical working of the quantitative classification, Mathews, 4.
Preliminary report on recent eruption of Soufrière in St. Vincent, and of a visit to Mont Pelée, in Martinique, Anderson and Flett, 1.
Preparing sections of rocks, Mackenzie, 1.
Principles controlling deposition of ores, Van Hise, 8.
Problems in geology of ore deposits, Vogt, 1.
Quantitative chemico-mineralogical classification and nomenclature of igneous rocks, Cross and others, 1.
Quantitative classification of igneous rocks, Cross and others, 2.

Petrology—Continued.
General—Continued.
Quantitative classification of igneous rocks, Merrill (G. P.), 9.
Quantitative classification of rocks, Mathews, 3.
Quantitative distribution of rock magmas, Washington, 8.
Ramosite not a mineral, Luquer, 3.
Recent progress in petrology, Ransome, 4.
Re-formed copper ores, Goodwin, 1.
Regeneration of clastic feldspar, Winchell (N. H.), 15.
Rock name anorthosyte, Kolderup, 4.
Rôle of igneous rocks in formation of veins, Kemp, 9.
Significance of occurrence of minute quantities of metalliferous minerals in rocks, Keyes, 34.
Sixth annual report of the Mining Bureau, McCaskey, 2.
Size of grain in igneous rocks in relation to distance from cooling wall, Queneau, 2.
Spheroidal granite, Kemp, 21.
Systematic petrography, Cross, 3.
Treatise on metamorphism, Van Hise, 12.
Variations of texture in Tertiary igneous rocks of the Great Basin, Spurr, 2.
Volcanic dust and sand from St. Vincent, Diller and Steiger, 1.
Rocks described.
Actinolite, Julien, 7.
Actinolite, Pratt and Lewis, 1.
Actinolite-schist, Palache, 2.
Adamellite, Ransome, 6, 13.
Ægirine-syenite, Osann, 1.
Akerite, Sears, 1.
Alaskite, Spurr, 2.
Alkalisyenite, Wright (F. E.), 3.
Alkali-syenite-porphyry, Palache, 3.
Alnoyte, Emerson (B. K.), 8.
Alnoyte porphyry, Emerson (B. K.), 8.
Amphibole-peridotite, Pratt and Lewis, 1.
Amphibole schist, Julien, 7.
Amphibolite, Emerson (B. K.), 6.
Amphibolite, Graton, 1.
Amphibolite, Marsters, 2, 3.
Amphibolite, Pratt and Lewis, 1.
Amphibolite, Wright (F. E.), 6.
Analcite, Emerson (B. K.), 9.
Analcite, Pirsson, 4.
Analcite-basalt, Clarke and Steiger, 1.
Analcite-basalt, Pirsson, 4.
Analcite-leucite-basalt, Pirsson, 4.
Analcite-tinguaite, Finlay (G. I.), 8.
Andesine rock, Kolderup, 4.
Andesite, Barrell, 1.
Andesite, Calkins, 1.
Andesite, Cross and Howe, 1.
Andesite, Diller, 7.
Andesite, Diller and Patton, 1.
Andesite, Emerson (B. K.), 6.

Petrology—Continued.
Rocks described—Continued.
Andesite, Finlay (G. I.), 8.
Andesite, Gregory (H. E.), 1.
Andesite, Guild, 1.
Andesite, Hogarty, 1.
Andesite, Jaggar and Palache, 1.
Andesite, Lawson and Palache, 1.
Andesite, Lindgren, 4, 28.
Andesite, Scott (O. N.), 1.
Andesite, Smith (D. T.), 2.
Andesite, Smith (G. O.), 3.
Andesite, Spurr, 29.
Andesite, Weed, 5.
Andesite-granophyre, Fairbanks, 7.
Andesitic tuff, Calkins, 1.
Andote, Johnson (D. W.), 6.
Anorthite, Pratt and Lewis, 1.
Anorthosite, Cushing, 5, 10.
Anorthosite, Ogilvie, 6.
Anorthosite, Pratt and Lewis, 1.
Anorthosite gabbro, Cushing, 2.
Anorthosyte, Kolderup, 4.
Apachite, Osann, 1.
Apatite, Osann, 2.
Aplite, Arnold and Strong, 1.
Aplite, Barrell, 1.
Aplite, Emerson (B. K.), 6.
Aplite, Reid (J. A.), 1.
Aplite, Smith and Calkins, 1.
Aplite, Spencer (A. C.), 10.
Aplite, Watson (T. L.), 5.
Aplite, Wright (F. E.), 6.
Aplite-granite, Weed, 5.
Arkite (leucite-porphyry), Washington, 1.
Arkose, Emerson (B. K.), 6.
Arkose, Van Hise, 12.
Ash, volcanic, Bergeat, 2, 3.
Ash, volcanic, Brauns, 1, 2.
Ash, volcanic, Schmidt, 1.
Ash, volcanic, Schottler, 1.
Augite-andesite, Cushing, 1.
Augite-andesite, Emerson (B. K.), 6.
Augite-andesite, Johnson (D. W.), 6.
Augite-andesite, Smith and Calkins, 1.
Augite-camptonite, Shimer, 1.
Augite-camptonyte, Barber, 1.
Augite-diorite-porphyrite, Palache, 3.
Augite-latite, Clarke and Steiger, 1.
Augite - monzonite - porphyry, Johnson (D. W.), 6.
Augite-orthophyr, Emerson (B. K.), 6.
Augite-porphyrite, Campbell (C. M.), 1.
Augite-porphyrite, Emerson (B. K.), 6.
Augite-syenite, Cross and Spencer, 1.
Augite-syenite, Barrell, 1.
Augite-syenite, Coleman, 8, 13.
Augite-syenite, Kemp, 11.
Augite-syenite, Cushing, 2.
Augite-syenite, Parks, 1.
Augite-teschenite, Fairbanks, 7.
Basalt, Belowsky, 1.
Basalt, Diller, 4, 11.
Basalt, Diller and Patton, 1.
Basalt, Emerson (B. K.), 6.
Basalt, Fairbanks, 7.

Petrology—Continued.
Rocks described—Continued.
Basalt, Finlay (G. I.), 8.
Basalt, Guild, 1.
Basalt, Jaggar and Palache, 1.
Basalt, Lawson and Palache, 1.
Basalt, Lindgren, 4, 21, 28
Basalt, Ordoñez, 14.
Basalt, Phalen, 1.
Basalt, Ransome, 6, 13.
Basalt, Smith (D. T.), 1.
Basalt, Smith (G. O.), 3.
Basalt; Smith and Calkins, 1.
Basalt, Spurr, 29.
Biotite, Julien, 7.
Biotite-aegerine-ijolite, Barlow, 4.
Biotite-diorite, Osmont, 1.
Biotite gneiss, Belowsky, 1.
Biotite-granite, Daly, 7.
Biotite-granite, Ransome, 13.
Biotite-granite, Spurr, 2.
Biotite-granite (quartz monzonite), Bascom, 1.
Biotite-granite-gneiss, Arnold and Strong, 1.
Biotite mica schist, Parks, 1.
Biotite-muscovite-granite, Smith and Calkins, 1.
Biotite schist, Warren, 2.
Biotite tinguaite, Sears, 1.
Biotite-rhyolite, Spurr, 2 .
Borolanose, Pirsson, 4.
Bostonite, Barrell, 1.
Bostonite, Osann, 1.
Bostonite, Pirsson, 4.
Bostonite, Smith (W. S. T.), 5.
Breccia, Barlow, 6.
Breccia, Johnson (D. W.), 6.
Breccia, Smith (W. S. T.), 5, 6.
Bytownite rock, Kolderup, 4.
Calcarenite, Grabau, 10.
Calcilutite, Grabau, 10.
Calcirudite, Grabau, 10.
Calcite-prehnite cement rock, Emerson (B. K.), 6.
Camptonite, Daly, 7.
Camptonite, Dresser, 2, 9.
Camptonite, Finlay (G. I.), 8.
Camptonite, Kemp, 32.
Camptonite, Ogilvie, 2.
Camptonyte, Barber, 1.
Cancrinite-syenite, Barlow, 4.
Celestite-bearing rocks, Kraus, 5.
Chert, Leith, 4.
Chert, Wright (F. E.), 6.
Chlorite schist, Parks, 1.
Chloritite, Pratt and Lewis, 1.
Coke, natural, Ochsenius, 1.
Conglomerate, Wright (F. E.), 6.
Covite (shonkinite), Washington, 1.
Dacite, Diller and Patton, 1.
Dacite, Finlay (G. I.), 8.
Dacite, Lindgren, 4.
Dacite, Ransome, 6, 13.
Dacite, Smith and Calkins, 1.
Dacite, Spurr, 3, 29.
Dacite-granophyre, Fairbanks, 7.

Petrology—Continued.
Rocks described—Continued.
Dacite-porphyry, Diller, 11.
Diabase, Bascom, 1, 3.
Diabase, Belowsky, 1.
Diabase, Cross and Howe, 1.
Diabase, Daly, 7.
Diabase, Dresser, 4.
Diabase, Emerson (B. K.), 6, 8, 9.
Diabase, Fairbanks, 7.
Diabase, Finlay (G. I.), 4.
Diabase, Haehl and Arnold, 1.
Diabase, Lane, 22.
Diabase, Leonard, 1.
Diabase, Lindgren, 1, 29.
Diabase, Parks, 1.
Diabase, Ransome, 6, 13.
Diabase, Smith and Calkins, 1.
Diabase, Warren, 2.
Diabase, Wilson (A. W. G.), 1.
Diabase, Wright (F. E.), 6.
Diabase aphanyte, Emerson (B. K.), 8.
Diabase-porphyrite, Palache, 3.
Diabase porphyry, Arnold and Strong, 1.
Dike rock, Smyth (C. H.), 2.
Diopside, Pratt and Lewis, 1.
Diorite, Barrell, 1.
Diorite, Cross and Spencer, 1.
Diorite, Daly, 7.
Diorite, Darton and Keith, 1.
Diorite, Finlay (G. I.), 4, 8.
Diorite, Jaggar and Palache, 1.
Diorite, Kay, 1.
Diorite, Leonard, 1.
Diorite, Lindgren, 4.
Diorite, Parks, 1.
Diorite, Phalen, 1.
Diorite, Smith and Calkins, 1.
Diorite, Spencer (A. C.), 10.
Diorite, Spurr, 29.
Diorite, Warren, 2.
Diorite, Weed, 5.
Diorite, Weidman, 5.
Diorite, Wright (F. E.), 6.
Diorite-aplite, Palache, 3.
Diorite-gneiss, Darton and Keith, 1.
Diorite-gneiss, Spencer (A. C.), 10.
Diorite-porphyrite, Palache, 3.
Diorite-porphyry, Barrell, 1.
Diorite-porphyry, Barber, 1.
Diorite-porphyry, Cross and Spencer, 1
Diorite-porphyry, Kemp, 32.
Diorite-porphyry, Lindgren, 29.
Diorite-porphyry, Palache, 2.
Diorite-porphyry, Ransome, 6, 13.
Diorite-porphyry, Smith and Calkins, 1.
Diorite-porphyry, Weed, 5.
Diorite schist, Julien, 7.
Diorite schist, Parks, 1.
Dioryte, Emerson (B. K.), 8.
Dolerite, Kay, 1.
Dolomite, Belowsky, 1.
Dolomite, Hoffmann, 6.
Dolomite, Knight (N.), 5, 6.
Dolomite, Newland, 1.
Dolomite, Van Hise, 12.

Petrology—Continued.
Rocks described—Continued.
Dolomite, Wright (F. E.), 6.
Dolomitic marble, Emerson (B. K.), 6.
Dunite, Pratt and Lewis, 1.
Eclogites, Holway 1.
Elæolithsyenite, Osann, 1.
Enstatite, Pratt and Lewis, 1.
Enstatite-gabbro, Osann, 2.
Enstatite-peridotite, Spurr, 3.
Enstatolite, Pratt and Lewis, 1.
Epidosite, Phalen, 2.
Epidote-quartz-schist, Emerson (B. K.), 6.
Essexite, Adams (F. D.), 7.
Essexite, Daly, 7.
Essexite, Dresser, 5, 9.
Essexite, Sears, 1.
Felsite, Hoffmann, 6.
Felsite, Wilson (A. W. G.), 1.
Felsite (rhyolite), Wright (F. E.), 6.
Fergusite, Pirsson, 4.
Fergusose, Pirsson, 4.
Foyaite, Washington, 1.
Gabbro, Bascom, 1, 3.
Gabbro, Coleman, 13.
Gabbro, Cushing, 10.
Gabbro, Diller, 11.
Gabbro, Lawson (A. C.), 11.
Gabbro, Lindgren, 4.
Gabbro, Ogilvie, 6.
Gabbro, Osann, 2.
Gabbro, Parks, 1.
Gabbro, Pratt and Lewis, 1.
Gabbro, Smith and Calkins, 1.
Gabbro, Todd (J. E.), 7.
Gabbro, Weed, 5.
Gabbro, Wright (F. E.), 6.
Gabbro, orbicular, Kessler and Hamilton, 1.
Gabbro-diorite, Dresser, 4.
Gabbro-diorite, Leonard, 1.
Gabbro-diorite, Pratt and Lewis, 1.
Gabbro-diorite, Watson (T. L.), 15.
Gabbro-porphyry, Johnson (D. W.), 6.
Glauconite, Leith, 4.
Glauconite, Prather, 3.
Glaucophane quartz-schist, Emerson (B. K.), 6.
Glaucophane schist, Thelen, 1.
Glaucophane schist, Nutter and Barber, 1.
Gneiss, Barlow, 6.
Gneiss, Bascom, 3.
Gneiss, Belowsky, 1.
Gneiss, Daly, 7.
Gneiss, Gordon, 1.
Gneiss, Graton, 1.
Gneiss, Lindgren, 21.
Gneiss, Ogilvie, 6.
Gneiss, Ordoñez, 14.
Gneiss, Phalen, 1.
Gneiss, Van Hise, 12.
Gneiss, Watson (T. L.), 8.
Graniphyro-liparose-alaskose, Iddings, 3.
Granite, Bascom, 3.

Petrology—Continued.
Rocks described—Continued.
Granite, Belowsky, 1.
Granite, Cross and Howe, 1.
Granite, Barlow, 6.
Granite, Brock, 3.
Granite, Cushing, 10.
Granite, Daly, 11.
Granite, Darton and Keith, 1.
Granite, Fairbanks, 7.
Granite, Finlay (G. I.), 1.
Granite, Graton, 1
Granite, Hawes, 2.
Granite, Henry, 1.
Granite, Jaggar and Palache, 1
Granite, Kemp, 21.
Granite, Lindgren, 4, 21.
Granite, Ogilvie, 6.
Granite, Ordoñez, 14.
Granite, Parks, 1.
Granite, Peck, 1.
Granite, Perry, 1.
Granite, Phalen, 1.
Granite, Ransome, 11, 13, 14.
Granite, Sears, 1.
Granite, Smith (W. S. T.), 5, 6.
Granite, Villarello, 7.
Granite, Warren, 1.
Granite, Watson (T. L.), 1, 3, 4, 8, 16.
Granite, Weidman, 5.
Granite, Williams (I. A.), 2.
Granite, Wilson (A. W. G.), 1.
Granite, Wright (F. E.), 6.
Granite-gneiss, Bascom, 1.
Granite-gneiss, Darton and Keith, 1.
Granite-porphyry, Calkins, 1.
Granite-porphyry, Ransome, 6, 11, 14.
Granite-porphyry, Smith and Calkins, 1.
Granite-porphyry, Spurr, 2.
Granitite, Clark and Steiger, 1.
Granitite, Ransome, 6, 13.
Grano-borolanose, Pirsson, 4.
Granodiorite, Arnold and Strong, 1.
Granodiorite, Brock, 3.
Granodiorite, Calkins, 1.
Granodiorite, Lindgren, 4.
Granodiorite, Ransome, 6.
Granodiorite, Smith and Calkins, 1.
Granophyre, Sears, 1.
Granophyre, Smith and Calkins, 1.
Grano-pulaskose, Pirsson, 4.
Grano-shoshonose, Pirsson, 4.
Granulite, Belowsky, 1.
Greenalite rock, Leith, 4.
Greenstone, Barlow, 6.
Greenstone, Howe, 3.
Greenstone, Silver, 1.
Grossularite, Daly, 7.
Harzburgite, Pratt and Lewis, 1.
Heronite, Clarke and Steiger, 1.
Hessose, Dresser, 11.
Highwoodose, Pirsson, 4.
Holyokeite, Emerson (B. K.), 3.
Hornblende, Gordon (C. H.), 4.
Hornblende, Phalen, 1.
Hornblende-andesite, Calkins, 1.

Petrology—Continued.
Rocks described—Continued.
Hornblende andesite, Johnson (D. W.), 6.
Hornblende-andesite, Spurr, 2.
Hornblende-augite andesite, Johnson (D. W.), 6.
Hornblende-augite trachy-andesite, Johnson (D. W.), 6.
Hornblende-biotite-granite (quartz monzonite) Bascom, 1.
Hornblende-biotite-quartz-diorite, Spurr, 2.
Hornblende-dacite, Palache, 3.
Hornblende-diorite, Sears, 1.
Hornblende-diorite-gneiss, Arnold and Strong.
Hornblende-diorite, Barber, 1.
Hornblende-epidote-gneiss, Sears, 1.
Hornblende-gneiss, Bascom, 3.
Hornblende-gneiss, Belowsky, 1.
Hornblende-gneiss, Emerson (B. K.), 6.
Hornblende-gneiss, Hobbs, 5.
Hornblende-granite, Sears, 1.
Hornblende-hypersthene-andesite, Calkins, 1.
Hornblende-porphyry, Smith and Calkins.
Hornblende-pyroxene-andesite, Smith and Calkins, 1.
Hornblende rock, Warren, 1.
Hornblende schist, Arnold and Strong, 1.
Hornblende schist, Julien, 7.
Hornblende-syenite, Le Roy, 1.
Hornblende schist, Thelen, 1.
Hornblende-syenite, Le Roy, 1.
Hornblendite, Arnold and Strong, 1.
Hornblendite, Spurr, 2.
Hornfels, Daly, 7
Hornstone, Barrell, 1.
Huronite, Wright (A. A.), 2.
Hydromagnesite, Newland, 1.
Hypersthene-akerite, Phalen, 2.
Hypersthene-basalt, Smith and Calkins, 1.
Hypersthene-biotite-gabbro, Osann, 2.
Hypersthene-dacite, Diller and Patton,
Hypersthene-gabbro, Bascom, 1
Hypersthene-gabbro, Leonard, 1.
Hypersthenite, Pratt and Lewis, 1.
Ijolite, Barlow, 4.
Ijolite, Washington, 1.
Jacupirangite, Washington, 1.
Jaspilite, Wright (F. E.), 6.
Jaspilite, Van Hise, 12.
Keratophyre, Sears, 1.
Kersantyte, Barber, 1.
Labradorite porphyrite, Wright (F. E.), 6.
Labradorite rock, Kolderup, 4.
Latite, Cross and Howe, 1.
Latite, Palache, 3.
Latite, Pirsson, 4.
Laurdalose, Dresser, 11.
Leopardite, Watson (T. L.), 14.

Petrology—Continued.
Rocks described—Continued.
Leucite-tinguaite, Wolff, 1.
Leucitite, Clarke and Steiger, 1.
Lignite, Hoffmann, 6.
Limburgite, Finlay (G. I.), 8.
Limburgite, Johnson (D. W.), 6.
Limburgite, Stevens (E. A.), 1, 2.
Limestone, Hobbs, 5, 6.
Limestone, Sears, 1.
Limestone, Van Hise, 12.
Limestone, Wright (F. E.), 6.
Limonite, Newland, 1.
Liparite, Osann, 1.
Liparite perlite, Emerson (B. K.), 6.
Madupite, Clarke and Steiger, 1.
Magnesite, Newland, 1.
Magnetite schist, Wright (F. E.), 6.
Malacolite, Emerson (B. K.), 6.
Marble, Barrell, 1.
Marble, Emerson (B. K.), 6.
Marble, Van Hise, 12.
Melaphyre, Burr, 1.
Metadiabase, Cross and Howe, 1.
Metadiabase, Ransome, 13.
Metagabbro, Bascom, 1, 3.
Metagabbro, Howe, 3.
Metagabbro, Spencer (A. C.), 10.
Metarhyolite, Bascom, 1.
Mica, Osann, 2.
Mica-andesite, Blake (J. C.), 1.
Mica-andesite, Johnson (D. W.), 6.
Mica-diorite, Pratt and Lewis, 1.
Mica-gneiss, Bascom, 1, 3.
Mica-peridotite, Ulrich, 8.
Mica-schist, Bascom, 3.
Mica-schist, Ogilvie, 6.
Mica-schist, Thelen, 1.
Microdiorite, Barrell, 1.
Micropegmatite, Arnold and Strong, 1.
Minette, Barber, 1.
Minette, Pirsson, 1.
Missourite, Clarke and Steiger, 1.
Missourite, Pirsson, 4.
Missourote, Pirsson, 4.
Monchiquite, Pirsson, 4.
Monchiquite, Shimer, 1.
Monchiquose, Pirsson, 4.
Monmouthite, Adams (F. D.), 8.
Montanose, Pirsson, 4.
Monzonite, Campbell (C. M.), 1.
Monzonite, Cross and Spencer, 1.
Monzonite, Pirsson, 1, 4.
Monzonite, Ransome, 6.
Monzonite-porphyry, Jaggar and Palache, 1.
Monzonite-porphyry, Smith (W. S. T.), 5.
Monzonyte, Barber, 1.
Monzonyte, Merrill (G. P.), 9.
Muscovite-granite, Ransome, 13.
Nepheline-basalt, Stevens (E. A.), 2.
Nepheline-syenite, Adams (F. D.), 8.
Nepheline-syenite, Barlow, 4.
Nepheline-syenite, Coleman, 8.
Nepheline-syenite, Miller (W. G.), 1, 7.
Nepheline-syenite, Sears, 1.

Petrology—Continued.
Rocks described—Continued.
Nepheline-syenite, Smith (W. S. T.), 5.
Nepheline-syenite-porphyry, Smith (W. S. T.), 6.
Nephelite syenite, Finlay (G. I.), 8.
Nephelite syenite, Kemp, 32.
Nordmarkite, Daly, 7.
Nordmarkite, Dresser, 5, 9.
Nordmarkite, Sears, 1.
Nordmarkite-porphyry, Daly, 7.
Nordmarkose, Dresser, 11.
Norite, Bascom, 1.
Norite, Leonard, 1.
Norite, Spencer (A. C.), 10.
Nosean-syenite, Pirsson, 4.
Oligoclase-gabbro, Spencer (A. C.), 10.
Oligoclase rock, Kolderup, 4.
Olivine basalt, Calkins, 1.
Olivine-basalt, Emerson (B. K.), 6.
Olivine basalt, Johnson (D. W.), 6.
Olivine-basalt, Phalen, 2.
Olivine-diabase, Barlow, 6.
Olivine-diabase, Fairbanks, 7.
Olivine-diabase, Palache, 3.
Olivine-diabase, Parks, 1.
Olivine-diabase-porphyrite, Palache, 3.
Olivine-gabbro, Pratt and Lewis, 1.
Olivine-hornblende-gabbro, Smith and Calkins, 1.
Olivinite, Whitaker, 1.
Ophicalcite, Dresser, 4.
Ophite, Lane, 22.
Orendite, Clarke and Steiger, 1.
Paisanite, Osann, 1.
Palagonite, Emerson (B. K.), 9.
Pegmatite, Ogilvie, 6.
Pegmatite, Reid (J. A.), 1.
Pegmatite, Smith (W. S. T.), 5.
Pegmatite, Smith and Calkins, 1.
Pegmatite, Spencer (A. C.), 10.
Pelites, Van Hise, 12.
Peridosteatite, Pratt and Lewis, 1.
Peridotite, Bascom, 1.
Peridotite, Fairbanks, 7.
Peridotite, Kemp, 11.
Peridotite, Leonard, 1.
Peridotite, Matson, 2.
Peridotite, Pratt and Lewis, 1.
Peridotite, Smith and Calkins, 1.
Peridotite, Spencer (A. C.), 10.
Peridotite, Wright (F. E.), 6.
Peridotite var. picrite, Phalen, 1.
Peridotite-amphibolite, Pratt and Lewis, 1.
Perknite, Turner, 2.
Persalane, Finlay (G. I.), 8.
Phonolite, Clarke and Steiger, 1.
Phonolite, Smith (W. S. T.), 5, 6.
Phonolith, Osann, 1.
Phyllite, Belowsky, 1.
Phyllite, Daly, 7.
Phyro-biotite-cascadose, Pirsson, 4.
Phyro-shonkinose, Pirsson, 4.
Pickryte, Emerson (B. K.), 8.
Picrotitanite, Whitaker, 1.
Pillow-lava, Daly, 9.

Petrology—Continued.
Rocks described—Continued.
Plumasite, Lawson (A. C.), 8.
Porphyrite Tuff, Bailey (L. W.), 10.
Porphyry, Bailey (L. W.), 10.
Porphyry, Kay, 1.
Porphyry, Lindgren, 29.
Porphyry, Tassin, 1.
Psammites, Van Hise, 12.
Psephites, Van Hise, 12.
Pseudoleucite, Smith (W. S. T.), 6.
Pseudoleucite-basalt, Pirsson, 4.
Pseudoleucite-porphyry, Smith (W. S. T.), 5.
Pulaskite, Adams (F. D.), 7.
Pulaskite, Brock, 3.
Pulaskite, Dresser, 5, 9.
Pulaskite, Sears, 1.
Pulaskite, Washington, 1.
Pumice, Diller, 7.
Pumice, Diller and Patton, 1.
Pyroclastic schist, Parks, 1.
Pyroxene, Gordon (C. H.), 4.
Pyroxene-andesite, Calkins, 1.
Pyroxene-andesite, Cross and Howe, 1
Pyroxene-andesite, Fairbanks, 7.
Pyroxene-andesite, Smith and Calkins, 1.
Pyroxene-tonalite, Emerson (B. K.), 6.
Pyroxenite, Calkins, 1.
Pyroxenite, Fairbanks, 7.
Pyroxenite, Gordon (C. H.), 5.
Pyroxenite, Graton, 1.
Pyroxenite, Kemp, 11.
Pyroxenite, Leonard, 1.
Pyroxenite, Osann, 2.
Pyroxenite, Pratt and Lewis, 1.
Pyroxenite, Smith (W. S. T.), 5.
Pyroxenite, Smith and Calkins, 1.
Pyroxenite (websterite), Bascom, 1.
Pyroxenite-amphibolite, Pratt and Lewis, 1.
Quartz, basalt, Calkins, 1.
Quartz-augite diorite, Sears, 1.
Quartz-augite-mica-diorite, Smith and Calkins, 1.
Quartz-biotite-diorite, Osmont, 1.
Quartz diabase, Emerson (B. K.), 8.
Quartz-diorite, Jaggar and Palache, 1.
Quartz-diorite, Spencer (A. C.), 10.
Quartz-diorite-porphyry, Barrell, 1.
Quartz-diorite-porphyry, Weed, 5.
Quartz-feldspar-porphyry, Iddings, 3.
Quartz hornblende-porphyrite, Arnold and Strong,
Quartz-latite, Cross and Howe, 1.
Quartz-mica-diorite, Barrell, 1.
Quartz-mica-diorite, Ransome, 6, 13.
Quartz-mica-diorite, Smith and Calkins, 1.
Quartz-monzonite, Arnold and Strong, 1.
Quartz-monzonite, Barrell, 1.
Quartz-monzonite, Cross and Howe, 1.
Quartz-monzonite, Ransome, 6, 13.
Quartz-monzonite, Weed, 5.

Petrology—Continued.
Rocks described—Continued.
Quartz-monzonite-porphyry, Cross and Howe.
Quartz-porphyry, Le Roy, 1.
Quartz-porphyry, Parks, 1.
Quartz-porphyry Perry, 1.
Quartz-porphyry, Watson (T. L.), 14.
Quartz-pyroxene-mica-diorite, Smith and Calkins,
Quartz-sericite-schist, Daly, 7.
Quartz-syenite-porphyry, Cross and Howe, 1.
Quartz-zoisite schist, Emerson (B. K.), 6.
Quartzite, Barlow, 6.
Quartzite, Barrell, 1.
Quartzite, Belowsky, 1.
Quartzite, Emerson (B. K.), 6.
Quartzite, Russell, 5.
Quartzite, Van Hise, 12.
Quartzite, Wright (F. E.), 6.
Quartzose schist, Parks, 1.
Quartzose schist, Thelen, 1.
Ramosite, Luquer, 3.
Rhyolite, Calkins, 1.
Rhyolite, Cross and Howe, 1.
Rhyolite, Fairbanks, 7.
Rhyolite, Farrington, 13.
Rhyolite, Guild, 1.
Rhyolite, Lindgren, 4, 28.
Rhyolite, Ordoñez, 1.
Rhyolite, Reid (J. A.), 1.
Rhyolite, Russell, 5.
Rhyolite, Smith (D. T.), 2.
Rhyolite, Spurr, 2, 3, 29.
Rhyolite, Weidman, 5.
Rhyolite-porphyry, Jaggar and Palache, 1.
Riebeckite, Murgoci, 1.
Salemite, Sears, 1.
Salemose, Finlay (G. I.), 8.
Salemose-limburgose, Finlay (G. I.), 8.
Sandstone, Sears, 1.
Sandstone, Van Hise, 12.
Sandstone, Wright (F. E.), 6.
Saxonite, Smith and Calkins, 1.
Scapolite amphibolite, Graton, 1.
Schist, Marsters, 2, 3.
Schist, Parks, 1.
Schist, Thelen, 1.
Schist, Van Hise, 12.
Sericite, Parks, 1.
Sericite, Spurr, 29.
Serpentine, Bascom, 1, 3.
Serpentine, Clarke (F. W.), 5.
Serpentine, Dresser, 4, 16.
Serpentine, Calkins, 1.
Serpentine, Clarke (F. W.), 2.
Serpentine, Diller, 11.
Serpentine, Jonas, 1.
Serpentine, Julien, 7.
Serpentine, Kraus, 1.
Serpentine, Leonard, 1.
Serpentine, Lindgren, 4.
Serpentine, Marsters, 2, 3.
Serpentine, Merrill (G. P.), 14.

Petrology—Continued.
  Rocks described—Continued.
    Serpentine, Newland, 1.
    Serpentine, Peck, 1.
    Serpentine, Pratt and Lewis, 1.
    Serpentine, Smith and Calkins, 1.
    Serpentine, Spencer (A. C.), 10.
    Shale, Wright (F. E.), 6.
    Shale, Van Hise, 12.
    Shonkinite, Barrell, 1.
    Shonkinite, Osann, 2.
    Shonkinite, Pirsson, 1, 3, 4.
    Shonkinite, Weed and Pirsson, 1.
    Shonkinose, Pirsson, 4.
    Shoshonose, Pirsson, 4.
    Slate, Eckel, 27.
    Slate, Sears, 1.
    Slate, Van Hise, 12.
    Slate, Weidman, 5.
    Soda-granite-porphyry, Clarke and Steiger, 1.
    Soda-rhyolite, Smith and Calkins, 1.
    Soda-syenite, Smith and Calkins, 1.
    Sodalite-syenite, Pirsson, 4.
    Sölvsbergite, Sears, 1.
    Spherulite, Parkinson, 1.
    Steatite, Pratt and Lewis, 1.
    Syenite, Barlow, 4.
    Syenite, Barrell, 1.
    Syenite, Coleman, 13.
    Syenite, Cushing, 10.
    Syenite, Daly, 7.
    Syenite, Kay, 1.
    Syenite, Ogilvie, 6.
    Syenite, Osann, 1.
    Syenite, Parks, 1.
    Syenite, Peck, 1.
    Syenite, Phalen, 1.
    Syenite, Pirsson, 1, 4.
    Syenite, Sears, 1.
    Syenite, Weed and Pirsson, 1.
    Syenite, Wright (F. E.), 3, 6.
    Syenite-porphyry, Cross and Spencer, 1.
    Syenite-porphyry, Pirsson, 4.
    Syenite-porphyry, Smith (W. S. T.), 5, 6.
    Syenite-porphyry, Wright (F. E.), 6.
    Syenite var. pulaskite, Pirsson, 4.
    Syenyte dike, Barber, 1.
    Syenyte-monzonyte, Barber, 1.
    Syenyte porphyry, Barber, 1.
    Tephrite, Stevens (E. A.), 2.
    Thaumasite, Penfield and Pratt, 1.
    Theralite, Dresser, 9.
    Tinguaite, Finlay (G. I.), 4, 8.
    Tinguaite, Kemp, 32.
    Tinguaite, Osann, 1.
    Trachiphyro-monzonose, Pirsson, 4.
    Tonalite, Spurr, 3.
    Tonalite-porphyry, Spurr, 3.
    Trachiphyro-highwoodose, Pirsson, 4.
    Trachiphyro - hornblende - adamellose, Pirsson, 4.
    Trachiphyro-monzonose, Pirsson, 4.
    Tracho-highwoodose, Pirsson, 4.
    Trachyandesite, Pirsson, 4.
    Trachydolerite, Jaggar and Palache, 1.

Petrology—Continued.
  Rocks described—Continued.
    Trachyte, Breed, 1.
    Trachyte, Cross (W.), 6.
    Trachyte, Dresser, 9.
    Trachyte, Emerson (B. K.), 6.
    Trachyte-porphyry, Pirsson, 4.
    Trap, Lane, 22.
    Tremolite, Peck, 1.
    Troctolite, Pratt and Lewis 1.
    Tuff, Barlow, 6.
    Turquoise, Johnson (D. W.), 6.
    Umptekite gabbro, Sears, 1.
    Unakite, Phalen, 2.
    Uralite-diabase, Palache, 3.
    Uralite-porphyry, Emerson (B. K.), 6.
    Variolite, Daly, 9.
    Vogesite, Finlay (G. I.), 8.
    Vogesyte, Barber, 1.
    Volcanic ash, Klein, 1.
    Volcanic dust, Bonney, 5.
    Volcanic dust, Porter (F. B.), 1.
    Websterite, Pratt and Lewis, 1.
    Windsorite, Daly, 7.
    Wyomingite, Clark and Steiger, 1.
Philippine Islands.
    Coal deposits of Batan Island, Smith (W. D.), 1.
    Coal deposits of Polillo Island, Wigmore, 1.
    Coal deposits on the Batan military reservation, Wigmore, 2.
    Coal Measures of the Philippine Islands, Burritt, 1.
    Crystallization of luzonite, Moses, 5.
    Geological reconnaissance of Bulacan, McCaskey, 1.
    Geology of the Philippine Islands, Becker, 1.
    Pigholugan and Pigtao gold regions, Island of Mindanao, Nichols (J. C.), 1.
    Sixth annual report of the Mining Bureau, McCaskey, 2.
    Volcanoes and seismic centers of the Philippine Archipelago, Maso, 1.
Physiographic geology.
  Alaska.
    Alaska glacers and glaciation, Gilbert, 13.
    Geography of Alaska, Brooks, 10.
    Geography of Alaska, Gannett, 2.
    Geological section of Rocky Mountains in northern Alaska, Schrader, 1.
    Geology and mineral resources of Copper River district, Schrader and Spencer, 1.
    Geology of Copper River region, Mendenhall, 8.
    Physiography of the Copper River basin, Spencer (A. C.), 2.
    Reconnaissance in Norton Bay region, Mendenhall, 1.
    Reconnaissance of the Cape Nome and adjacent gold fields of Seward Peninsula, Brooks and others, 1.
    Wrangell Mountains, Mendenhall, 5.

Physiographic geology—Continued.

Appalachian region.

Anticlinal folds near Meadville, Pa., Smallwood and Hopkins, 1.
Appalachian River in eastern Tennessee, White (C. H.), 1.
Asheville folio, Keith, 9.
Base leveling and its faunal significance, Adams (C. C.), 1.
Beaver folio, Pennsylvania, Woolsey, 3.
Brownsville-Connellsville folio, Campbell (M. R.), 8.
Charleston folio, Campbell (M. R.), 2.
Current notes on physiography, Davis (W. M.), 7, 10, 13, 41, 43.
Deposits of copper ores at Ducktown, Tenn., Kemp, 10.
Drainage modifications in Ohio, West Virginia, and Kentucky, Tight, 4.
Elkland-Tioga folio, Fuller and Alden, 2.
Gaines folio, Fuller and Alden, 1.
Geographic development of northern Pennsylvania and southern New York, Campbell (M. R.), 9.
Geological excursion in Pittsburg region, Grant (U. S.), 4.
Geology of Garrett County, Martin (G. C.), 2.
Geology of the Tallulah gorge, Jones (S. P.), 1.
Granites and gneisses of Georgia, Watson (T. L.), 8.
Hydrography of southern Appalachian region, Pressey, 1, 2.
Hydrography of the southern Appalachians, Pressey and Myers, 1.
Indiana folio, Richardson (G. B.), 3.
Kansas glaciation and its effects on the river system of northern Pennsylvania, Williams (E. H.), 2.
Kittanning folio, Butts, 4.
Latrobe folio, Campbell (M. R.), 18.
Lineaments of the Atlantic border region, Hobbs, 22.
Masontown-Uniontown folio, Campbell (M. R.), 6.
Maynardville folio, Keith, 1.
Northward flow of ancient Beaver River, Hice, 1.
Original southern limit of anthracite beds, Lyman, 3.
Paleozoic Appalachia, Willis, 1.
Physiographic features of Maryland, Abbe, 1.
Physiographic features of the Susquehanna basin, Hollister, 1.
Physiographic studies in southern Pennsylvania, Stose, 3.
Physiography of Garrett County, Abbe, 2.
Raleigh folio, Campbell (M. R.), 5.
Stream contest along the Blue Ridge, Davis (W. M.), 48.
Tertiary history of the Tennessee River, Johnson (D. W.), 9.

Physiographic geology—Continued.

Appalachian region—Continued.

Topography and travel in Pennsylvania, Tower, 2.
Underground waters of New Jersey, Knapp (G. N.), 1.

Atlantic coast region.

Current notes on physiography, Davis (W. M.), 16, 30.
Fall-linie der südostlichen Vereinigten Staaten, Abbe, 3.
Forms of sand-dunes, Cobb, 4.
Geology of Coastal Plain formations, Shattuck, 5.
Glacial conditions on Long Island, Buffet, 1.
Lineaments of the Atlantic border region, Hobbs, 22.
New York City folio, Merrill and others, 1.
Norfolk folio, Darton, 7.
Origin of sandhill topography of the Carolinas, Cobb, 1.
Physical features of Cecil County, Md., Shattuck, 3.
Physiographic features of Maryland, Abbe, 1.
Physiography of Cecil County, Md., Shattuck, 4.
Recent changes in North Carolina coast, Cobb, 2.
Submarine canyon of Hudson River, Spencer (J. W.) 12.
Submarine valleys off the American coast, Spencer (J. W.), 10.
Underground waters of New Jersey, Knapp (G. N.), 1.
Washington folio, Darton and Keith, 1.

Canada.

Ancient channels of Ottawa River, Ells (R. W.), 5.
Current notes on physiography, Davis (W. M.), 8, 20, 21, 38.
Cuspate forelands, Wilson (A. W. G.), 8.
Economic resources of Moose River basin, Bell (J. M.), 2.
Exploration in Canadian Rockies, Wilcox, 1.
Exploration of northern side of Hudson Strait, Bell (Robert), 1.
Exploration of south shore of Hudson Strait, Low, 1.
Geological explorations in Athabaska, Dowling, 6.
Geological notes on the vicinity of Banff, Ogilvie, 3.
Geology of Brome Mountain, Dresser, 11.
Geology of Nastapoka Islands, Low, 3.
Geology of northeast coast of Labrador, Daly, 3.
Geography of Red River Valley, Dowling, 2.
Geology of region adjoining western part of international boundary, Daly, 4.

Physiographic geology—Continued.
- *Canada*—Continued.
  - Geology of the Three Rivers map sheet, Ells (R. W.), 2.
  - Geology of west shore of Lake Winnipeg, Dowling, 1.
  - Geology of Yellow Head Pass route, McEvoy, 1.
  - Iron ores of Nipissing district, Miller (W. G.), 2.
  - Iron ranges of Michipicoten west, Bell (J. M.), 3.
  - Iroquois beach in Ontario, Coleman, 16, 17.
  - Lake basins in Alberta and British Columbia, Parkinson, 2.
  - Laurentian peneplain, Wilson (A. W. G.), 6.
  - Lineaments of the Atlantic border region, Hobbs, 22.
  - Natural history and physiography of New Brunswick, Ganong, 3.
  - Physical geography of northern Appalachian system, Dresser, 1.
  - Physical geology of central Ontario, Wilson (A. W. G.), 2.
  - Physiography of Acadia, Daly, 1.
  - Physiography of New Brunswick, Ganong, 1–3.
  - Physiography of the Archean areas of Canada, Wilson (A. W. G.), 10.
  - Pleistocene of Montreal and Ottawa Valley, Buchan, 3.
  - Raised shore lines along Blue Mountain escarpment, Hunter, 2.
  - Raised shore lines of St. Lawrence Valley and Great Lakes, Chalmers, 6.
  - Report on parts of Manitoba and Keewatin, Tyrrell, 1.
  - Report on surface geology shown on Frederickton and Andover quarter-sheet maps, Chalmers, 3.
  - Shore features of Lake Huron, Jefferson, 3.
  - Surface geology of eastern Quebec, Chalmers, 10.
  - Surface geology of southern part of Quebec, Chalmers, 8.
  - Trent River system, Wilson (A. W. G.), 9.
  - Up and down the Mississaga, Graton, 2.
- *Central America.*
  - Gebirgbaus von Mittelamerika, Sapper, 22.
- *Great Basin region.*
  - Arid district between Rio Grande and Pacific, Carter (O. S. C.), 5.
  - Basin-range structure in the Death Valley region, Campbell (M. R.), 13.
  - Basin-range structure of the Humboldt region, Louderback, 4.
  - Bisbee folio, Ransome, 14.
  - Block mountains of Basin Range province, Davis (W. M.), 52.
  - Clifton folio, Lindgren, 28.
  - Colorado Canyon, Davis (W. M.), 61.

Physiographic geology—Continued.
- *Great Basin region*—Continued.
  - Desert dry lakes of California, Bailey (G. E.), 1.
  - Enseignements du Grand Canyon du Colorado, Davis (W. M.), 25.
  - Geology and ore deposits of the Bisbee quadrangle, Ransome, 11.
  - Geology of Nevada, Spurr, 6.
  - Geology of region of Walker River, Smith (D. T.), 2.
  - Geology of the Tonopah mining district, Spurr, 29.
  - Globe folio, Ransome, 13.
  - Grand Canyon of the Colorado, Davis (W. M.), 1.
  - Hurricane fault in southwestern Utah, Huntington and Goldthwait, 1, 2.
  - Mountain ranges of Great Basin, Davis (W. M.), 46.
  - Origin of Basin ranges, Gilbert, 11.
  - Petrified forests and Painted Desert of Arizona, Carter (O. S. C.), 6.
  - Physiography of southern Arizona and New Mexico, Fairbanks, 5.
  - Plateau province of Utah and Arizona, Davis (W. M.), 45.
  - Structural section of a Basin range, Louderback, 3.
  - Structures of Basin ranges, Keyes, 45.
  - Underground waters of Salt River Valley, Lee (W. T.), 9.
  - Walls of Colorado Canyon, Davis (W. M.), 31.
  - Wasatch, Canyon, and House ranges, Davis (W. M.), 59.
  - Zuni salt lake, Darton, 19.
- *Great Lakes region.*
  - Ancient drainage at Niagara Falls, Currie, 1.
  - Chicago folio, Alden, 1.
  - Current notes on physiography, Davis (W. M.), 10, 34.
  - Eskers and esker lakes of northeastern Indiana, Dryer, 1.
  - Formation of Sandusky Bay, Mosely, 2.
  - Geological history of the Great Lakes, Upham, 33.
  - Geological reconnaissance along north shore, Russell, 23.
  - Geology and paleontology of Niagara Falls, Grabau, 1.
  - Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.
  - Lakes of southeastern Wisconsin, Fenneman, 1.
  - Ontario coast, Martin (J. O.), 1.
  - Physical history of Niagara River, Gilbert, 1.
  - Physiography of Wisconsin, Collie, 2.
  - Stream capture in Michigan, Bowman (I.), 1.
  - Submerged valleys in Sandusky Bay, Mosely, 1.
  - Surface geology of Alcona County, Michigan, Leverett, 3.

Physiographic geology—Continued.
Great Lakes region—Continued.
Vermilion iron-bearing district of Minnesota, Clements, 3.
Wisconsin shore of Lake Superior, Collie, 1.
Great Plains region.
Age of the Missouri River, Upham, 26.
Aladdin folio, Darton and O'Harra, 1.
Canyons of northeastern New Mexico, Lee (W. T.), 6.
Concretions and their geological effects, Todd (J. E.), 6.
Current notes on physiography, Davis (W. M.), 20, 37, 40.
Flint hills of Kansas, Mead (J. R.), 1.
Geological observations on the Rosebud Indian Reservation, Reagan, 5.
High plains and their utilization, Johnson (W. D.), 1.
Hydrographic history of South Dakota, Todd (J. E.), 4.
Newcastle folio, Darton, 14.
Oelrichs folio, Darton, 8.
Old Platte channel, Condra, 4.
Physiographic divisions of Kansas, Adams (G. I.), 5, 9.
Region between the Northern Pacific Railroad and Missouri River, Wood (L. H.), 1.
Report of Geological Survey, Babcock, 1.
Report of State geologist of Nebraska, Barbour (E. H.), 8.
Story of the prairies, Willard, 1.
Structure of the Great Plains and the mountains on their western margin, Darton, 27.
Sundance folio, Darton, 26.
Topographic features and geological formations of North Dakota, Leonard, 4.
Hawaiian Islands.
Geology of Hawaiian Islands, Branner, 6.
Mexico.
Barrancas de Las Minas, Ordoñez, 16.
Fisiographia, geologia e hidrologia de La Paz, Angermann, 1.
Geographic and geologic features of Mexico, Hill (R. T.), 2.
Geology of western Mexico, Farrington, 13.
Nauhcampatepetl ó Cofre de Perote, Ordoñez, 18.
Mississippi Valley region.
Age of the Missouri River, Upham, 26.
Concrete examples from topography of Howard County, Calvin, 6.
Cottonwood Falls folio, Prosser and Beede, 1.
Current notes on physiography, Davis (W. M.), 36.
Dalles of the St. Croix, Berkey, 1.
Delavan lobe of Wisconsin stage of glaciation, Alden, 3.

Physiographic geology—Continued.
Mississippi Valley region—Continued.
Evolution of lowlands of southeastern Missouri, Marbut, 1.
Geography and geology of Minnesota, Hall (C. W.), 6.
Geology and physiography of Missouri, Marbut, 4.
Geology of Benton County, Savage, 7.
Geology of Cherokee and Buena Vista counties, Macbride, 2.
Geology of Clay and O'Brien counties, Macbride, 1.
Geology of Clinton County, Udden (Jon A.), 1.
Geology of Emmet, Palo Alto, and Pocahontas counties, Macbride, 4.
Geology of Fayette County, Savage, 8.
Geology of Henry County, Iowa, Savage, 2.
Geology of Howard County, Iowa, Calvin, 10.
Geology of Jasper County, Williams (I. A.), 1.
Geology of Jefferson County, Udden, 5.
Geology of Louisa County, Iowa, Udden, 2.
Geology of Marion County, Miller (B. L.), 1.
Geology of Miller County, Ball and Smith, 1.
Geology of Moniteau County, Van Horn, 1.
Geology of Oktibbeha County, Logan, 2.
Geology of Page County, Iowa, Calvin, 1.
Geology of Pottawattamie County, Iowa, Udden, 3.
Geology of Wapello County, Iowa, Leonard, 3.
Geology of Webster County, Iowa, Wilder, 3.
Growth of Mississippi Delta, Upham, 7.
Lakes of Indiana and their marl deposits, Blatchley and Ashley, 1.
Mississippi River from Cape Girardeau to the head of the passes, Brown (R. M.), 3.
Physiography and geology of Ozark region, Adams (G. I.), 3.
Physiography of Iowa, Calvin, 13.
Physiography of Wisconsin, Collie, 2.
Pre-Glacial drainage in southwestern Ohio, Tight, 3.
Pre-Glacial peneplain in the driftless area, Grant (U. S.), 7.
Preliminary report upon bluff and Mississippi alluvial lands of Louisiana, Clendenin, 2.
Pre-Potsdam peneplain of pre-Cambrian of north-central Wisconsin, Weidman, 1.
When was the Mississippi River Valley formed?, Farnsworth, 1.
Winoka gravels, Park (E. J.), 1.
Zinc and lead deposits of Arkansas, Adams (G. I.), 15.

Physiographic geology—Continued.
- *New England and New York.*
  - American Association for Advancement of science, summer meeting, Hovey, 46.
  - Ancient gorge of Hudson River, Wright (G. F.), 15.
  - Ancient water levels of Champlain and Hudson valleys, Woodworth, 10.
  - Changes of level at Cape Ann, Tarr, 3.
  - Connecticut rivers, Hobbs, 1.
  - Current notes on physiography, Davis (W. M.), 12, 21.
  - Delta plain at Andover, Mass., Mills (F. S.), 2.
  - Delta plains of Nashua Valley, Crosby, 8.
  - Drainage features of central New York, Tarr, 11, 14.
  - Elevated beaches of Cape Ann, Woodworth, 5.
  - Finger lake region of western New York, Dryer, 4.
  - Formation of natural bridges, Cleland, 4.
  - Geological history of Charles River, Clapp, 1.
  - Geology of Adirondack region, Cushing, 10.
  - Geology of Grand Isle County, Perkins, 11.
  - Geology of Paradox Lake quadrangle, Ogilvie, 6.
  - Geology of the vicinity of Little Falls, Cushing, 9.
  - Glacial cirques and rock-terraces on Mount Toby, Massachusetts, Emerson (B. K.), 4.
  - Glacial erosion in finger lake region, Campbell (M. R.), 19.
  - Glacial conditions on Long Island, Buffet, 1.
  - Glacial topography in central New Hampshire, Emerson (P.), 1.
  - Glacial waters from Oneida to Little Falls, Fairchild, 8.
  - Gorges and waterfalls of central New York, Tarr, 12.
  - Gorges and waterfalls of New York, Reid (H. F.), 15.
  - Gorges and waterfalls of New York, Spencer (J. W.), 17.
  - Gorges and waterfalls of New York, Tarr, 13.
  - Granite area of Barre, Vt., Finlay (G. I.), 3.
  - Hanging valleys in the finger lake region of New York, Tarr, 6.
  - Inter-Glacial gorge problem, Matson, 1.
  - Interpretations of physiography of New York State, Brigham, 3.
  - Island tying, Gulliver, 5.
  - Lineaments of the Atlantic border region, Hobbs, 22.
  - Lower Silurian system of eastern Montgomery County, N. Y., Cumings, 6.
  - Minnewaska region, James, 1.

Physiographic geology—Continued.
- *New England and New York*—Continued.
  - Moraines of Seneca and Cayuga Lake valleys, Tarr, 10.
  - Nantucket shore lines, Gulliver, 3.
  - Newark system of the Pomperaug Valley, Hobbs, 2.
  - Origin of channels surrounding Manhattan Island, Hobbs, 24.
  - Physical geography and geology of Connecticut, Rice, 1.
  - Physical geography and geology of Springfield, Orr, 1.
  - Physical geography, etc., of Essex County, Mass., Sears, 1.
  - Physical geography of New York State, Tarr, 2.
  - Physiographic belts in western New York, Gilbert, 10.
  - Physiography of Lake George, Kemp, 4, 7, 15.
  - Physiography of the Adirondacks, Kemp, 37.
  - Pleistocene geology of western New York, Fairchild, 2.
  - Pre-Glacial course of middle portion of Genesee River, Whitbeck, 1.
  - Pre-Glacial stream flow in central New York, Carney, 2.
  - Pre-Glacial stream flow in central New York, Fairchild, 5.
  - Pre-Iroquois channels between Syracuse and Rome, Fairchild, 4.
  - Protection of terraces in upper Connecticut River, Hitchcock (C. H.), 5.
  - Reconnaissance of the Elizabeth Islands, Hollick, 1.
  - River sysem of Connecticut, Hobbs, 3.
  - River terraces and reversed drainage, Mills (F. S.), 1.
  - River terraces in New England, Davis (W. M.), 29.
  - Still rivers of western Connecticut, Hobbs, 6.
  - Sudbury basin shore lines, Gulliver, 6.
  - Syllabus for field and laboratory work in geology, Tarr, 1.
  - Taconic physiography, Dale, 9.
  - Terraces of Westfield River, Massachusetts, Davis (W. M.), 28.
  - Type case in diversion of drainage, Carney, 1.
  - Water supply from delta type of sand plain, Crosby, 13.
- *Ohio Valley region.*
  - Changes in drainage near Lancaster, Hyde, 1.
  - Ditney folio, Fuller and Ashley, 1.
  - Drainage of southern Indiana, Newsom, 1.
  - Drainage modifications in Knox, Licking, and Coshocton counties, Clark (W. Blair), 1.
  - Drainage modifications in Ohio, West Virginia, and Kentucky, Tight, 4.
  - Drainage modifications in Washington and adjacent counties, Ohio, Tight, 2.

- **Physiographic geology**—Continued.
  - *Ohio Valley region*—Continued.
    - Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.
    - Geology of Cincinnati, Nickles, 3.
    - History of Little Miami River, Bownocker, 1.
    - Inter-Glacial valley in Illinois, Hubbard (G. D.), 1.
    - Lower Carboniferous area of southern Indiana, Ashley, 2.
    - Physiographic and ecological study of the Lake Eagle region, Mills (W. M.), 1.
    - Pre-Glacial drainage conditions in vicinity of Cincinnati, Fowke, 2.
    - Pre-Glacial drainage of Wayne and adjacent counties, Ohio, Todd (J. H.), 1.
    - Section across southern Indiana, Newsom, 3.
    - Topographic features of lower Tippecanoe Valley, Breeze, 2.
    - Topography and geography of Bean Blossom Valley, Monroe County, Ind., Marsters, 1.
    - Topography and geology of Clifton Gorge, Wells (W. E.), 1.
    - Topography of Athens and vicinity, Ohio, Stearns (R. E. C.), 3.
    - Valley of lower Tippecanoe River, Breeze, 1.
    - Wabash River terraces in Tippecanoe County, Ind., McBeth, 3.
  - *Pacific coast region.*
    - Abandoned stream gaps in northern Washington, Smith (G. O.), 12.
    - Asymmetry of crest lines in the high Sierra of California, Gilbert, 19.
    - Coos Bay folio, Diller, 4.
    - Current notes on physiography, Davis (W. M.), 5.
    - Domes and dome structure of the high Sierras, Gilbert, 17.
    - Ellensburg folio, Smith (G. O.), 7.
    - Erosion on the Pacific coast, Holder, 2.
    - Faunal relations of the Carrizo Creek beds, Arnold, 3.
    - Geological reconnaissance across the Cascade Range, Smith and Calkins, 1.
    - Geology and petrography of Crater Lake National Park, Diller and Patton, 1.
    - Geology and physiography of central Washington, Smith (G. O.), 8.
    - Geology and water resources of central Oregon, Russell, 21.
    - Geology and water resources of east-central Washington, Calkins, 3.
    - Geology of Mineral King, Knopf and Thelen, 1.
    - Geology of the John Day Basin, Merriam (J. C.), 1.
    - Geomorphogeny of Kern Basin, Lawson (A. C.), 10.

- **Physiographic geology**—Continued.
  - *Pacific coast region*—Continued.
    - Great lava-flood, Redway, 1.
    - Hanging valleys of the Yosemite, Branner, 5.
    - Lake Chelan, Fairbanks, 4.
    - Lake Chelan and its glacier, Gannett, 3.
    - Mount Lassen and cinder cone region, Miller (E. I.), 1.
    - Mount Stuart folio, Smith (G. O.), 13.
    - Origin of transverse mountain valleys, Le Conte, 1.
    - Pacific mountain system, Spencer (A. C.), 5.
    - Pacific mountain system of British Columbia and Alaska, Spencer (A. C.), 4.
    - Periodic migrations between Asiatic and American coasts of the Pacific Ocean, Smith (J. P.), 4.
    - Petroleum in California, Claypole, 3.
    - Physiographic features of Klamath Mountains, Anderson (F. M.), 2.
    - Physiography and deformation of the Wenatchee-Chelan district, Willis, 11.
    - Physiography and geology of the Siskiyou Range, Anderson (F. M.), 5.
    - Physiography of California, Fairbanks, 3.
    - Post-Tertiary deformation of the Cascade Range, Willis, 13.
    - Potter Creek cave, Sinclair, 5.
    - Prehistoric California, Yates (L. G.), 1.
    - Profile of maturity in Alpine glacial erosion, Johnson (W. D.), 3.
    - Post-Tertiary elevation of Sierra Nevada, Turner, 9.
    - River terraces of Klamath region, Hershey, 20.
    - River terraces of the Orleans basin, Hershey, 22.
    - San Luis folio, Fairbanks, 7.
    - Sierran valleys of Klamath region, Hershey, 18.
    - Terraces of the High Sierra, Gilbert, 24.
    - Tertiary peneplain in Klamath region, California, Hershey, 15.
    - Topographic development of Klamath Mountains, Diller, 10.
    - Wreck of Mount Mazama, Diller, 8.
  - *Panama.*
    - Current notes on physiography, Davis (W. M.), 33.
  - *Rocky Mountain region.*
    - Aladdin folio, Darton and O'Harra, 1.
    - Alps of Montana, Matthes, 2.
    - Canyons of southeastern Colorado, Lee (W. T.), 4.
    - Current notes on physiography, Davis (W. M.), 9, 12, 42, 44.
    - Description of Bates Hole, Wyoming, Knight (W. C.), 1.
    - Ephemeral lakes in arid regions, Keyes, 30.
    - Fracture valley system, Iddings, 2.

Physiographic geology—Continued.
Rocky Mountain region—Continued.
Geological reconnaissance in eastern Valencia County, N. Mex., Johnson (D. W.), 2.
Geological reconnaissance in Montana and Idaho, Lindgren, 21.
Geological structure of New Mexican bolson plains, Keys, 29.
Geology and water resources of Nez Perce County, Part I, Russell, 1.
Geology and water resources of Snake River plains, Russell, 5.
Geology of Black Hills, Darton, 1.
Geology of the Boulder district, Fenneman, 10.
Great Flat at Butte, Weed, 32.
Hanging valleys, Russell, 20.
Hanging valleys of Georgetown, Colo., Crosby, 6.
Hydrographic history of South Dakota, Todd (J. E.), 4.
La Plata folio, Cross and Spencer, 1.
Lewis Range of Montana and its glaciers, Matthes, 4.
Our northern Rockies, Chapman, 1.
Physiography of Flathead Lake region, Elrod (M. J.), 1.
Physiography of northern Rocky Mountains, Willis, 8.
Silverton folio, Cross and Howe, 1.
Spanish Peaks folio, Hills, 1.
Sundance folio, Darton, 26.
Twin Lakes glaciated area, Westgate, 1.

Southwestern region.
Atoka folio, Taff, 3.
Austin folio, Hill and Vaughan, 1.
Basin features of southwestern United States, Keyes, 40.
Bisection of mountain blocks, Keyes, 52.
Bolson plains, Keyes, 38.
Bolson plains, Tight, 6.
Boston Mountain physiography, Hershey, 12.
Clinoplains of the Rio Grande, Herrick (C. L.), 5.
Colgate folio, Taff, 2.
Contact of Permian with Pennsylvanian in Oklahoma, Kirk (C. T.), 1.
Ephemeral lakes in arid regions, Keyes, 30.
Genesis of the Arkansas Valley, Keyes, 4.
Geological structure of New Mexican bolson plains, Keyes, 29.
Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
Geology of Arbuckle and Wichita Mountains, Taff, 13.
Geology of the Cerrillos Hills, Johnson (D. W.), 4.
High altitude conoplain, Ogilvie, 5.
Lake Otero, Herrick (C. L.), 6.

Physiographic geology—Continued.
Southwestern region—Continued.
Laws of formation of New Mexico mountain ranges, Herrick (C. L.), 4.
Peneplains of the Ozark Highland, Hershey, 1.
Physical geography, geology, and resources of Texas, Dumble, 1.
Physiography of Ozark region, Marbut, 3.
Physiography of the Boston Mountains, Purdue, 3.
Saddle-back topography of the Boone chert region, Purdue, 4.
Structures of Basin ranges, Keyes, 45.
Tishomingo folio, Taff, 6.
Topography and geology of New Mexico, Jewett, 1.
West Indies.
Geography of Cuba, Vaughan and Spencer, 1.
Geologic and physiographic history of the Lesser Antilles, Hill (R. T.), 13.
Geological and physical development of Barbados, Spencer (J. W.), 6.
Geological and physical development of Dominica, Spencer (J. W.), 5.
Geological reconnaissance of Cuba, Hayes, Vaughan, and Spencer, 1.
Geological relationship of volcanoes of West Indies, Spencer (J. W.), 8.
Geology and physiography of Cuba, Hamilton, 2.
Physiography and geology of Bahama Islands, Shattuck and Miller, 1.
Porto Rico, its topography and aspects, Wilson (H. M.), 1.
Preliminary report on recent eruption of Soufrière, in St. Vincent, and of a visit to Mont Pelée, in Martinique, Anderson and Flett, 1.
Volcanic disturbances in West Indies, Hill (R. T.), 6.
Vulkane von Guatemala und Salvador, Sapper, 1.
Windward Islands, Spencer (J. W.), 7.
General.
Base level, grade, and peneplain, Davis (W. M.), 26.
Bathymetrical features of the north Polar seas, Nansen, 2.
Bearing of physiography upon Suess's theories, Davis (W. M.), 57.
Bibliography of submarine valleys, Spencer (J. W.), 15.
Boston Mountain physiography, Hershey, 12.
Buried cypress forests, Bibbins, 3.
Cirques, Brown (R. M.), 4.
Classification of mountains, Rice, 3.
Climatic features in the land surface, Penck, 1.
Complications of geographical cycle, Davis (W. M.), 56.
Current notes on physiography, Davis (W. M.), 4, 6, 11, 12, 14, 18, 35, 39, 40, 43.

Physiographic geology—Continued.

General—Continued.

- Development of profile of equilibrium of subaqueous shore terrace, Fenneman, 2.
- Distribution of fresh-water faunas as an evidence of drainage modifications, Johnson (D. W.), 8.
- Drainage of cuestas, Davis (W. M.), 24.
- Field work in physical geography, Davis (W. M.), 27.
- Fiords and hanging valleys, Upham, 30.
- Formation and geology of salt deposits, Jones (F. O.), 1.
- Frontier of physiography, Hobbs, 17.
- Gaspee Point: a type of cuspate foreland, Brown (R. M.), 2.
- Geographic distribution of metalliferous ores within the United States, Ransome, 12.
- Geographical cycle, Davis (W. M.), 22.
- Geographical cycle in an arid climate, Davis (W. M.), 55.
- Geology and water resources of east-central Washington, Calkins, 3.
- Hanging valleys, Russell, 20.
- Influence of caverns on topography, Russell, 19.
- Influence of underlying rocks on vegetation, Cowles, 2.
- Introduction to physical geography, Gilbert and Brigham, 1.
- Laboratory manual of physical geography, Brigham, 2.
- Lessons in physical geography, Dryer, 2.
- Leveling without base-leveling, Davis (W. M.), 60.
- Limiting width of meander belts, Jefferson, 1.
- Mountain growth and mountain structure, Willis, 15.
- New physical geography, Tarr, 4.
- Nordhavets bund og den gamle landbro mellem Island og Groenland, Kolderup, 2.
- North America, Russell, 15.
- Physical conditions in America during man's early occupancy, Wright (G. F.), 13.
- Physical geography, Tarr, 4.
- Physiographic improbability of land at the North Pole, Spencer (J. W.), 14.
- Physiographic problems of to-day, Russell, 14.
- Physiography in the university, Marbut, 5.
- Physiography—its scope and applications, Eggleston, 2.
- Relation between base-leveling and plant distribution, Cowles, 1.
- Relation of faults to topography, Spurr, 16.
- Relation of physical geography to other science subjects, Norton, 2.
- Relief of the earth's surface, Curtis, 3.
- River terraces in New England, Davis (W. M.), 29.
- Submarine canyon of Hudson River, Spencer (J. W.), 13.
- Terraces of Westfield River, Massachusetts, Davis (W. M.), 28.
- Three new physiographic terms, Salisbury, 5.
- Types of sedimentary overlap, Grabau, 19.
- Unconformity in mountain elevations, Heilprin, 11.
- Value of topographic maps, Chapman, 2.
- Youth, maturity, and old age of topographic forms, Johnson (D. W.), 11.

Quaternary.

Alaska.

- Alaska glaciers and glaciation, Gilbert, 13.
- Geological section of Rocky Mountains in northern Alaska, Schrader, 1.
- Geology of Copper River region, Mendenhall, 8.
- Reconnaissance in Alaska, Schrader, 3.
- Search for mammoth and other fossil remains, Maddren, 1.

Appalachian region.

- Accounting for the depth of the Wyoming buried valley, Lyman, 1.
- Beaver folio, Pennsylvania, Woolsey, 3.
- Brownsville-Connellsville folio, Campbell (M. R.), 8.
- Charleston folio, Campbell (M. R.), 2.
- Clays of upper Ohio and Beaver River region, Hice, 2.
- Elders Ridge folio, Stone (R. W.), 7.
- Geology of Garrett County, Martin (G. C.), 1.
- Geology of Pittsburg district, White (I. C.), 6.
- Glacial gravels of the Kittanning quadrangle, Leverett, 10.
- Kittanning folio, Butts, 4.
- Latrobe folio, Campbell (M. R.), 18.
- Masontown-Uniontown folio, Campbell (M. R.), 6.
- Rural Valley folio, Butts, 6.
- Waynesburg folio, Stone (R. W.), 6.

Atlantic coast region.

- Crania of Trenton, N. J., Hrdlička, 1.
- Geological notes, Hollick, 13.
- Geology of Coastal Plain formations, Shattuck, 5.
- Geology of Long Island, Veatch, 5.
- Glacial geology of New Jersey, Salisbury and others, 1.
- New York City folio, Merrill and others, 1.
- Norfolk folio, Darton, 7.
- Pleistocene problem in Maryland, Shattuck, 7.
- Pleistocene problem of the North Atlantic coastal plain, Shattuck, 1.

Quaternary—Continued.
- *Atlantic coast region*—Continued.
  - Recently discovered facts in regard to Silver Lake, Hollick, 12.
  - Results of resurvey of Long Island, Fuller and Veatch, 1.
  - Stratigraphy of New Jersey clays, Kümmel and Knapp, 1.
  - Surface formations in southern New Jersey, Salisbury, 1.
  - Washington folio, Darton and Keith, 1.
- *Canada.*
  - Artesian borings, surface deposits, and ancient beaches, Chalmers, 5.
  - Artesian wells of Montreal, Adams and LeRoy, 1.
  - Borings for natural gas, petroleum, and water, Chalmers, 4.
  - Canadian fossil insects, Scudder, 1.
  - Explorations in Saskatchewan and Keewatin, Tyrrell, 3.
  - Geologie von Canada, Haas, 2.
  - Geology of Nevada, Spurr, 6.
  - Geology of northeast coast of Labrador, Daly, 3.
  - Geology of Province of Quebec, Ells (R. W.), 8.
  - Geology of the principal cities in eastern Canada, Ami, 1.
  - Geology of the Three Rivers map sheet, Ells (R. W.), 2.
  - Geology of west shore of Lake Winnipeg, Dowling, 1.
  - Iron ranges of the Lower Huronian, Coleman, 4.
  - Michipicoten iron region, Coleman and Willmott, 1.
  - Physical geology of central Ontario, Wilson (A. W. G.), 2.
  - Pleistocene deposits north of Lake Ontario, Wilson (A. W. G.), 11.
  - Pleistocene of Montreal and Ottawa Valley, Buchan, 3.
  - Report on surface geology shown on Frederickton and Andover quarter-sheet maps, Chalmers, 3.
  - Sea beaches of eastern Ontario, Coleman, 5.
  - Shore lines and landslips of St. Lawrence Valley, Chalmers, 1.
  - Synopsis of geology of Canada, Ami, 2.
- *Central America.*
  - Pleistocene Foraminifera from Panama, Cushman, 2.
- *Great Basin region.*
  - Bisbee folio, Ransome, 14.
  - Borings in Silver Spring Valley, Arizona, Douglas, 1.
  - Copper deposits of Clifton-Morenci district, Lindgren, 29.
  - Geology of Globe copper district, Ransome, 6.
  - Globe folio, Ransome, 13.
  - Historical geology of Esmeralda County, Nev., Turner, 5.
  - Underground waters of Salt River Valley, Lee (W. T.), 9.

Quaternary—Continued.
- *Great Lakes region.*
  - Chicago folio, Alden, 1.
  - Forest beds of the lower Fox, Lawson (P. V.), 1.
  - Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.
  - Lakes of southeastern Wisconsin, Fenneman, 1.
  - Physiographical field notes in the town of Wauwatosa, Wis., Bruncken, 1.
- *Great Plains region.*
  - Aladdin folio, Darton and O'Harra, 1.
  - Camp Clarke folio, Darton, 10.
  - Casselton-Fargo folio, Hall and Willard, 1.
  - De Smet folio, Todd and Hall, 3.
  - Fossil human remains found near Lansing, Kans., Holmes, 1.
  - Geology and water resources of the James River Valley, Todd and Hall, 2.
  - Hartville folio, Smith (W. S. T.), 1.
  - Huron folio, Todd (J. E.), 15.
  - Man in Kansas during the Iowan stage of the Glacial period, Upham, 9.
  - Oelrichs folio, Darton, 8.
  - Olivet folio, Todd (J. E.), 9.
  - Scotts Bluff folio, Darton, 11.
  - Sundance folio, Darton, 26.
- *Gulf region.*
  - Geology of Mississippi embayment, Harris, 2.
  - Oil fields of Texas-Louisiana Gulf coastal plain, Hayes and Kennedy, 1.
  - Underground waters of Louisiana, Harris, 6.
  - Underground waters of southern Louisiana, Harris, 8.
- *Mexico.*
  - Criaderos de fierro de la hacienda de Vaquerias, Villarello and Böse, 1.
- *Mississippi Valley region.*
  - Discovery of the Lansing skeleton, Concannon, 1.
  - Evidences (?) of water deposition of loess, Shimek, 14.
  - Examination of soils from Illinois, Whitney (M.), 1.
  - Fossil man from Kansas, Williston, 12.
  - Fossil man of Lansing, Kans., Upham, 10.
  - Fresh-water shells in the loess, Shimek, 7.
  - Geological formations of Iowa, Calvin, 4.
  - Geology of Benton County, Savage, 7.
  - Geology of Cedar County, Iowa, Norton, 1.
  - Geology of Cherokee and Buena Vista counties, Macbride, 2.
  - Geology of Clay and O'Brien counties, Macbride, 1.
  - Geology of clays, Beyer and Williams, 2.

Quaternary—Continued.
Mississippi Valley region—Continued.
Geology of Clinton County, Udden (Jon A.), 1.
Geology of Dakota County, Burchard, 2.
Geology of Emmet, Palo Alto, and Pocahontas counties, Macbride, 4.
Geology of Fayette County, Savage, 8.
Geology of Henry County, Iowa, Savage, 2.
Geology of Jasper County, Iowa, Williams (I. A.), 1.
Geology of Jefferson County, Iowa, Udden, 5.
Geology of Louisa County, Iowa, Udden, 2.
Geology of Marion County, Miller (E. L.), 1.
Geology of Minnesota, Hall (C. W.), 7.
Geology of Mississippi Valley at Little Falls, Minn., Winchell (N. H.), 8.
Geology of Monroe County, Iowa, Beyer and Young, 1.
Geology of Oktibbeha County, Logan, 2.
Geology of Page County, Iowa, Calvin, 1.
Geology of Pottawattamie County, Iowa, Udden, 3.
Geology of Wapello County, Leonard, 3.
Geology of Webster County, Iowa, Wilder, 3.
Kakabikansing, Brower, 1.
Lansing deposit not loess, Shimek, 12.
Lansing skeleton, Winchell (N. H.), 12.
Loess and the Iowan drift, Shimek, 13.
Loess of southwestern Iowa, Willcox, 1.
Man in the Ice Age at Lansing, Kans., and Little Falls, Minn., Upham, 9.
Mastodon and mammoth remains, Anderson (N. C.), 1.
Primitive man and stone implements in North American loess, Upham, 11.
Primitive man in the Ice Age, Upham, 12.
Proboscidean fossils of Pleistocene deposits in Illinois and Iowa, Udden, 11.
Soils of Illinois, Leverett, 1.
Surface deposits of Missouri and Kansas, Broadhead, 7.
Tenth annual report of State geologist, Calvin, 5.

New England and New York.
Changes of level at Cape Ann, Tarr, 3.
Clays of Boston basin, Brown (R. M.), 1.
Geological and botanical notes: Cape Cod and Chappaquidick Island, Hollick, 4.
Geology of Fishers Island, Fuller (M. L.), 29.
Geology of Long Island, Veatch, 5.
Geology of Rand Hill, Cushing, 2.

Quaternary—Continued.
New England and New York—Continued.
Pleistocene fauna of Sankaty Head, Cushman, 3.
Pleistocene formations of Sankaty Head, Nantucket, Wilson (J. H.), 1.
Pleistocene geology of Mooers quadrangle, Woodworth, 9.
Pleistocene geology of Nassau County, Woodworth, 2.
Pleistocene history of Fishers Island, Fuller (M. L.), 40.
Reconnaissance of the Elizabeth Islands, Hollick, 1.
Representatives of pre-Wisconsin till, Fuller (M. L.), 1.
Results of resurvey of Long Island, Fuller and Veatch, 1.

Ohio Valley region.
Discovery of a musk ox skull, Hatcher, 12.
Ditney folio, Fuller and Ashley, 1.
Fossil land shells of old forest bed of Ohio River, Billups, 1.
Glacial formations and drainage features of Erie and Ohio basins, Leverett, 4.
Lower Carboniferous area of southern Indiana, Ashley, 2.
Nomenclature of Ohio geological formations, Prosser, 10, 15.
Paleontology of Bartholomew County, Ind., mammalian fossils, Edwards (J. J.), 1.
Patoka folio, Fuller and Clapp, 2.

Pacific coast region.
Coos Bay folio, Diller, 4.
Ellensburg folio, Smith (G. O.), 7.
Excavations in a Quaternary cave in Shasta County, Furlong, 1.
Geological reconnaissance across the Cascade Range, Smith and Calkins, 1.
Geological section of the Coast Ranges, Osmont, 1.
Geology of the John Day basin, Merriam (J. C.), 1.
Gold belt of Blue Mountains of Oregon, Lindgren, 4.
Klamath Mountain section, Diller, 12.
Marine Pliocene and Pleistocene stratigraphy of coast of southern California, Arnold and Arnold, 1.
Marine Pliocene and Pleistocene of San Pedro, Arnold, 2.
Port Orford folio, Diller, 11.
Quaternary deposits of southern California, Hershey, 14.
River terraces of Klamath region, Hershey, 20.
River terraces of the Orleans basin, Hershey, 22.

Rocky Mountain region.
Aladdin folio, Darton and O'Harra, 1.
Geological reconnaissance in Montana and Idaho, Lindgren, 21.

Quaternary—Continued.
Rocky Mountain region—Continued.
Geology of Black Hills, Darton, 1.
La Plata folio, Cross and Spencer, 1.
Nampa folio, Lindgren and Drake, 1.
Pleistocene geology of the Sawatch Range, near Leadville, Colo., Capps and Leffingwell, 1.
Silver City folio, Lindgren and Drake, 2.
Silverton folio, Cross and Howe, 1.
Stratigraphy and structure, Lewis and Livingston ranges, Montana, Willis, 6.
Sundance folio, Darton, 26.
Southwestern region.
Age of lavas of plateau region, Reagan, 2.
Colgate folio, Taff, 2.
Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
Geology and water resources of Oklahoma, Gould, 14.
Geology of Fort Apache region, Reagan, 3.
Geology of southwestern Texas, Dumble, 13.
Geology of the Jemez-Albuquerque region, Reagan, 1.
Oil and gas fields of western interior and Gulf coast, Adams (G. I.), 2.
Tishomingo folio, Taff, 6.
West Indies.
Geological and physical development of Antigua, Spencer (J. W.), 1.
Windward Islands, Spencer (J. W.), 7.
General.
Cause of Glacial period, True (H. L.), 1.
Experiences with early man in America, Sternberg, 1.
How long ago was America peopled, Matthew (G. F.), 24.
Loess and the Lansing man, Shimek, 5.
Organic remains in post-Glacial deposits, Olsson-Seffer, 1.
Primitive man in the Ice Age, Upham, 13.

Rhode Island.
Cement materials and industry of the United States, Eckel, 34.
Clays of the United States, Ries, 6.
Gaspee Point, a type of cuspate foreland, Brown (R. M.), 2.
Minerals of Rhode Island, Davis (C. Abbott), 1.
Underground waters of Massachusetts and Rhode Island, Crosby, 14.
Water resources of Rhode Island, Crosby, 19.

Salvador.
Vulkan Izalco, Sapper, 7.
Vulkanische Ereignisse in Mittelamerika, Sapper, 20, 21.

Silurian.
Alaska.
Geological section of Rocky Mountains in northern Alaska, Schrader, 1.
Geology of Copper River region, Mendenhall, 8.
Preliminary report on the Ketchikan mining district, Brooks, 4.
Reconnaissance in Alaska, Schrader, 3.
Tin deposits of the York region, Collier, 8.
Appalachian region.
Devonic and Ontaric formations of Maryland, Schuchert, 7.
Greeneville folio, Keith, 11.
Manlius formation of New York, Schuchert, 4.
Maynardville folio, Keith, 1.
Niagara period near Cumberland, Uhler, 1.
Paleozoic Appalachia, Willis, 1.
Paleozoic faunas, Weller 6.
Palezoic formations of Allegany County, Prosser, 3.
Preliminary report on the Paleozoic formations, Weller, 3.
Rocks of Green Pond Mountain region, Kümmel and Weller, 2.
Rome folio, Hayes (C. W.), 5.
Siluric and Devonic Cystidea and Camarocrinus, Schuchert, 11.
Atlantic coast region.
New York City folio, Merrill and others, 1.
Canada.
Artesian wells of Montreal, Adams and LeRoy, 1.
Counties of Cumberland, Hants, Kings, and Annapolis, Fletcher, 6.
Exploration de l'Ile d'Anticosti, Combes, 1.
Exploration of Ekwan River, Dowling, 8.
Formation of sedimentary deposits, Wilson (A. W. G.), 7.
Fossiliferous rocks of southwest Ontario, Parks, 4.
Genus Trimerella, with descriptions of species from Silurian rocks of Keewatin, Whiteaves, 3.
Geological exploration in district of White Bay, Howley, 1.
Geological formations about Montreal, Ami and Adams, 1.
Geological record of Rocky Mountain region, Dawson, 2.
Geologie von Canada, Haas, 2.
Geology and natural resources of Ottawa and vicinity, Ells (R. W.), 7.
Geology of the principal cities in eastern Canada, Ami, 1.
Geology of the Three Rivers map sheet, Ells (R. W.), 2.
Monographie de l'Ile d'Anticosti, Schmitt, 1.
New Brunswick, Bailey (L. W.), 5.

Silurian—Continued.
- *Canada*—Continued.
  - Notes on the late collecting season, Grant (C. C.), 10.
  - Percé: sketch of its geology, Clarke (J. M.), 26.
  - Petroleum and natural gas [in Ontario], Corkill, 2.
  - Problems in New Brunswick geology, Ells (R. W.), 25.
  - Silurian and Devonian formations of eastern Canada, Ami, 12.
  - Stratigraphical note, Ami, 10.
  - Synopsis of geology of Canada, Ami, 2.
- *Great Basin region.*
  - Geology and vein phenomena of Arizona, Comstock (T. B.), 1.
  - Geology of Nevada, Spurr, 6.
  - Historical geology of Esmeralda County, Nev., Turner, 5.
  - Paleozoic rocks of Great Basin region, Weeks, 9.
- *Great Lakes region.*
  - Asphalt in Delta County, Mich., Lane, 6.
  - Chicago folio, Alden, 1.
  - Geological reconnaissance along north shore, Russell, 23.
  - Gypsum deposits in Ohio, Peppel, 1.
  - On the Salina group in northeastern Ohio, Claypole, 2.
  - Paleozoic coral reefs, Grabau, 10.
  - Physiographical field notes in the town of Wauwatosa, Wis., Bruncken, 1.
  - Stratigraphy and paleontology of the Niagara of northern Indiana, Kindle, 6.
  - Stratigraphy and paleontology of the Niagara of northern Indiana, Schuchert, 10.
- *Greenland.*
  - Bidrag till nordöstra Grönlands geologi, Nathorst, 1.
- *Mississippi Valley region.*
  - Formations of northern Arkansas, Ulrich, 5.
  - Geological formations of Iowa, Calvin, 4.
  - Geological section across northern Illinois, Udden, 1.
  - Geology of Cedar County, Iowa, Norton, 1.
  - Geology of Clinton County, Udden (Jon A.), 1.
  - Geology of Fayette County, Savage, 8.
  - Geology of Illinois, Rolfe, 1.
  - Geology of Minnesota, Hall (C. W.), 7.
  - Geology of Missouri, Gallaher, 1.
  - Lead and zinc deposits of southwestern Wisconsin, Grant (U. S.), 5.
  - Niagara limestones of Hamilton County, Ind., Kindle, 2.
  - Physiography and geology of the Ozark region, Adams (G. I.), 3.
  - Tahlequah folio, Taff, 17.
  - Water resources in Arkansas, Purdue, 9.

Silurian—Continued.
- *New England and New York.*
  - American Association for Advancement of Science, summer meeting, Hovey (E. O.), 46.
  - Ammonoosuc district of New Hampshire, Hitchcock (C. H.), 6.
  - Celestite near Syracuse, Kraus, 2.
  - Cobleskill limestone of New York, Hartnagel, 1.
  - Contact lines of Upper Siluric formations on the Brockport and Medina quadrangles, New York, Clarke, Ruedemann, and Luther, 1.
  - Eurypterid fauna from the Salina, Sarle, 2.
  - Geologic map of the Tully quadrangle, Clarke and Luther, 3.
  - Geological study of the Fox Islands, Smith (G. O.), 2.
  - Geology and paleontology of Niagara Falls, Grabau, 1.
  - Geology of eastern New York, Prosser, 11.
  - Geology of Littleton, Hitchcock (C. H.), 10.
  - Geology of Onondaga County, N. Y., Schneider, 1.
  - Geology of Perry basin, Smith and White, 1.
  - Geology of the Hudson Valley, Dale, 5.
  - Graptolite (Levis) facies of Beekmantown formation in Rensselaer County, N. Y., Ruedemann, 3.
  - Guelph fauna of New York, Clarke and Ruedemann, 1.
  - Gypsum deposits in New York, Eckel, 22.
  - Lime and cement industries of New York, Ries, 4.
  - Manlius formation of New York, Schuchert, 4.
  - Map of Canandaigua and Naples quadrangles, Clarke and Luther, 1.
  - Quarry industry in southeastern New York, Eckel, 6.
  - Reef structures in the Clinton and Niagara strata, Sarle, 1.
  - Report of State paleontologist, Clarke (J. M.), 5.
  - Rocks of Rondout, Van Ingen and Clark, 1.
  - Siluric and Devonic faunas of Trilobite Mountain, Shimer, 5.
  - Siluric or Ontaric section of eastern New York, Hartnagel, 2.
  - Stratigraphy of Becraft Mountain, Grabau, 9.
  - Undulations of the Lockport limestone, Gilbert, 23.
- *Ohio Valley region.*
  - Bearing of Clinton and Osgood formations on age of Cincinnati anticline, Foerste, 4.
  - Cincinnati anticline in southern Kentucky, Foerste, 3.
  - Cincinnati geanticline, Foerste, 10.

Silurian—Continued.

Ohio Valley region—Continued.
- Columbia folio, Hayes and Ulrich, 1.
- Devonian era in Ohio basin, Claypole, 5.
- New fossils from Corniferous, Hamilton, and Medina shales, Herzer, 5.
- Niagara domes of northern Indiana, Kindle, 3.
- Niagara group, Foerste, 2.
- Niagara group unconformities in Indiana, Elrod (M. N.), 1.
- Nomenclature of Ohio geological formations, Prosser, 10, 15.
- Ohio natural-gas fields, Bownocker, 4.
- Oil and gas producing rocks of Ohio, Bownocker, 3.
- Ordovician and Silurian rocks of Indiana, Foerste, 11.
- Petroleum and natural gas in Ohio, Bownocker, 5.
- Section across southern Indiana, Newsom, 3.
- Silurian and Devonian limestones, Foerste, 1.
- Silurian and Devonian limestones of western Tennessee, Foerste, 7.
- Stratigraphy and paleontology of the Niagara of northern Indiana, Schuchert, 10.
- Terms Linden and Clifton limestones in Tennessee geology, Foerste, 5.
- Topography and geology of Indiana, Hopkins (T. C.), 11.

Southwestern region.
- Atoka folio, Taff, 3.
- Geology of Arbuckle and Wichita Mountains, Taff, 13.
- Geology of Fort Apache region, Reagan, 3.
- Siluric fauna near Batesville, Ark., Van Ingen, 1. 2.
- Tishomingo folio, Taff, 6.
- Topography and geology of Clifton Gorge, Wells (W. E.), 1.

General.
- Physical characters and history of some New York formations, Grabau, 17.
- Siluro-Devonian boundary question, Williams (H. S.), 2.

South Carolina.
- Carolina gold deposits, Weed, 3.
- Carolina tin belt, Graton, 3.
- Cement materials and industry of the United States, Eckel, 34.
- Clays of the United States, Ries, 6.
- Mineral resources, Sloan, 1.
- Phosphate industry, Chazal, 1.
- Recent earthquakes, Davison (C.), 1.
- Tin, Struthers and Pratt, 1.
- Tin deposits of the Carolinas, Pratt and Sterrett, 1.
- Underground waters of South Carolina, Glenn, 10.

South Dakota.
- Age of Homestake lode, Hewett, 2.
- Aladdin folio, Darton and O'Harra, 1.
- Alexandria folio, Todd and Hall, 1.
- Artesian wells in North and South Dakota, Upham, 1.
- Bald Mountain district in the Black Hills, Blatchford, 2.
- Benton formation in eastern South Dakota, Todd (J. E.), 13.
- Black Hills ore deposits, O'Harra, 1.
- Building stones of South Dakota, Todd (J. E.), 7.
- Cave regions of the Ozarks and Black Hills, Owen, 4.
- Cement materials and industry of the United States, Eckel, 34.
- Crystal cave, Hovey (E. O.), 34.
- Current notes on physiography, Davis (W. M.), 35.
- Cyanide process in Black Hills of South Dakota, Fulton, 1.
- Cycads from Black Hills, Wieland, 10.
- Dakota Cretaceous of Kansas and Nebraska, Gould, 5.
- Deposit of fuller's earth, Cook, 1.
- Deposits of wolframite in the Black Hills, Irving, 1.
- De Smet folio, Todd and Hall, 3.
- Economic resources of Black Hills, Irving and Emmons, 1.
- Edgemont folio, Darton and Smith, 1.
- Geological observations on the Rosebud Indian Reservation, Reagan, 5.
- Geologische Streifzüge durch die Prärien und Felsengebirge Nordamerikas, Fraas, 2.
- Geology and mineralogy of the Black Hills, O'Harra, 3.
- Geology and underground-water resources of the central Great Plains, Darton, 18.
- Geology and water resources of James River Valley, Todd and Hall, 2.
- Geology of artesian basins, McCaslin, 1.
- Geology of Lincoln County, Bendrat, 1.
- Geology of South Dakota, Todd (J. E.), 14.
- Geology of the Black Hills, Jaggar, 5.
- Glacial drift in the Dakotas, Upham, 27.
- Gold ores of the Black Hills, Chance, 1.
- Gold production of North America, Lindgren, 16.
- Golden West mine, Storms, 5.
- Gypsum deposits in South Dakota, Darton, 15.
- Heteroceras simplicostatum, Whitfield, 3.
- Huron folio, Todd (J. E.), 15.
- Hydrographic history of South Dakota, Todd (J. E.), 4.
- Igneous rocks of the Sundance folio, Smith (W. S. T.), 5.

South Dakota—Continued.
- Jurassic stratigraphy on west side of Black Hills, Loomis, 3.
- Laccoliths of the Black Hills, Jaggar, 1.
- Locality furnishing Cretaceous fishes, Hay, 12.
- Mammals from Oligocene of South Dakota, Matthew (W. D.), 22.
- Megacerops tyleri, Lull, 5.
- Mineral building material, fuels and waters of South Dakota, Todd (J. E.), 5.
- Mineral wealth of Black Hills, O'Harra, 2.
- Mineralogical notes, Headden, 4.
- Miocene mammals of South Dakota, Matthew and Gidley, 1.
- Mitchell folio, Todd (J. E.), 11.
- New dinosaur, Stegosaurus marshi, Lucas (F. A.), 2.
- New form of calcite-sand crystal, Barbour and Fisher, 2.
- New rhinoceros, Trigonias osborni, Lucas (F. A.), 1.
- Newcastle folio, Darton, 14.
- Newly discovered rock at Sioux Falls, Todd (J. E.), 8, 12.
- Oelrichs folio, Darton, 8.
- Oligocene beds of the Bad Lands, Fraas, 1.
- Olivet folio, Todd (J. E.), 9.
- Ore deposits of northern Black Hills, Irving, 2.
- Ore deposits of the Black Hills, Irving, 3, 4.
- Parker folio, Todd (J. E.), 10.
- Potsdam formation of Bald Mountain district, Blatchford, 1.
- Problems of the Dakota artesian system, Todd (J. E.), 2.
- Red Beds of Black Hills, Richardson (G. B.), 2.
- Stratigraphy and paleontology of Black Hills rim, Wieland, 11.
- Stratigraphy of the Black Hills, Darton, 2.
- Sundance folio, Darton, 26.
- Triassic and Jurassic strata of the Black Hills, Hovey (E. O.), 13.
- Tungsten ores in the Black Hills, Simmons, 1.
- Wolframite in Black Hills, Forsyth, 1.
- Wolframite in Black Hills, Raymond (R. W.), 2.

Tennessee.
- Appalachian River in eastern Tennessee, White (C. H.), 1.
- Asheville folio, Keith, 9.
- Carboniferous of the Appalachian basin, Stevenson (J. J.), 6.
- Cincinnati group in western Tennessee, Foerste, 6.
- Classification of geologic formations of Tennessee, Safford, 2.
- Clays of the United States, Ries, 6.

Tennessee—Continued.
- Columbia folio, Hayes and Ulrich, 1.
- Copper deposits of Appalachian States, Weed, 17.
- Copper deposits of eastern United States, Weed, 37.
- Copper deposits of southern United States, Weed, 2.
- Cranberry folio, Keith, 4.
- Cumberland Gap coal field, Ashley, 3, 4.
- Cumberland Plateau coal field, Duffield, 1.
- Deposits of copper ores at Ducktown, Kemp, 10.
- Ducktown copper mining district, McCallie, 4.
- Erratic bowlder from Coal Measures, McCallie, 5.
- Fossiliferous sandstone dikes in Eocene of Tennessee and Kentucky, Glenn, 8.
- Geology of Tennessee, Safford and Killebrew, 1.
- Gerard Troost, Glenn, 9.
- Gisements de minerais de zinc, Demaret, 1.
- Greeneville folio, Keith, 11.
- Horizons of phosphate rocks, Safford, 1.
- Iron ore deposits of the Cranberry district, Keith, 5.
- Iron ores of Shady Valley, Garrison, 2.
- Jellico coal field, Evans (N. N.), 2.
- Lower Carboniferous of Appalachian basin, Stevenson (J. J.), 4.
- Maynardville folio, Keith, 1.
- Meteoreisen-Studien, Cohen, 4.
- Meteorite from Hendersonville, Glenn, 3.
- Minerals of region about Nashville, Glenn, 7.
- Mount Mitchell folio, Keith, 12.
- Mount Pleasant phosphate field, Ruhm, 1.
- Portland-cement resources of Tennessee, Ulrich, 7.
- Silurian and Devonian limestones, Foerste, 1.
- Silurian and Devonian limestones of western Tennessee, Foerste, 7.
- Southern Appalachian coal field, Hayes (C. W.), 7.
- Stoneware and brick clays, Eckel, 18.
- Tennessee iron ores, Maxwell, 1.
- Tennessee marbles, Keith, 6.
- Tennessee white phosphate, Eckel, 3.
- Tennessee white phosphate, Hayes (C. W.), 3, 15.
- Terms Linden and Clifton limestones in Tennessee geology, Foerste, 5, 9.
- Tertiary history of the Tennessee River, Johnson (D. W.), 9.
- Underground waters of Tennessee and Kentucky, Glenn, 11.
- Water resources of Tennessee, Glenn, 4.

Tennessee—Continued.
- White phosphates of Decatur County, Eckel, 20.
- Zinc mining in east Tennessee, Keith, 8.

Tertiary.
- *Alaska.*
  - Coal resources of Alaska, Brooks, 3.
  - Geological section of Rocky Mountains in northern Alaska, Schrader, 1.
  - Geology about Chichagof Cove, Palache, 3.
  - Geology of Copper River region, Mendenhall, 8.
  - Gold placers of Fortymile, Birch Creek, and Fairbanks regions, Prindle, 2.
  - Reconnaissance in Alaska, Schrader, 3.
- *Atlantic coast region.*
  - Administrative report, New Jersey Geological Survey, Smock, 1.
  - Cretaceous-Eocene boundary in the Atlantic coastal plain, Clark (W. B.), 4.
  - Eocene deposits of Maryland, Clark and Martin, 1.
  - Geology of coastal plain formations, Shattuck, 5.
  - Miocene deposits of Maryland, Clark (W. B.), 6.
  - Miocene deposits of Maryland, Shattuck, 10.
  - Miocene formation of Maryland, Shattuck, 6.
  - Norfolk folio, Darton, 7.
  - Physical features of Cecil County, Md., Shattuck, 3.
  - Relations of Maryland Miocene, Dall, 14.
  - Stratigraphy of New Jersey clays, Kümmel and Knapp, 1.
  - Surface formations in southern New Jersey, Salisbury, 1.
  - Tertiary fauna of Florida, Dall, 8.
  - Underground waters of New Jersey, Knapp (G. N.), 1.
  - Washington folio, Darton and Keith, 1.
- *Canada.*
  - Boundary Creek district, Brock, 3.
  - Coal field of Souris River, Dowling, 9.
  - Geological record of Rocky Mountain region, Dawson, 2.
  - Geologie von Canada, Haas, 2.
  - Geology of Yellow Head Pass route, McEvoy, 1.
  - Klondike gold fields, McConnell, 5.
  - Nicola coal basin, Ells (R. W.), 23.
  - Synopsis of geology of Canada, Ami, 2.
- *Great Basin region.*
  - Geology of Globe copper district, Ransome, 6.
  - Geology of Nevada, Spurr, 6.
  - Geology of region of Walker River, Smith (D. T.), 2.
  - Geology of the Tonopah mining district, Spurr, 29.
  - Globe folio, Ransome, 13.
  - Historical geology of Esmeralda County, Nev., Turner. 5.

Tertiary—Continued.
- *Great Basin region*—Continued.
  - Lake Quibiris, an ancient Pliocene lake in Arizona, Blake (W. P.), 6.
  - Notes on geology of southeastern Arizona, Dumble, 7.
  - Triassic ichthyosaurs from California and Nevada, Osborn, 15.
  - Underground waters of Salt River Valley, Lee (W. T.), 9.
- *Great Plains region.*
  - Aladdin folio, Darton and O'Harra, 1.
  - Camp Clarke folio, Nebraska, Darton, 10.
  - Comparison of fossil diatoms, Elmore, 1.
  - Fossil mammals of Tertiary of northeastern Colorado, Matthew (W. D.), 2.
  - ological observations on the Rosebud Indian Reservation, Reagan, 5.
  - Geology and underground water resources of the central Great Plains, Darton, 18.
  - Geology and water resources of Patrick and Goshen Hole quadrangles, Adams (G. I.), 4.
  - Hartville folio, Smith (W. S. T.), 1.
  - High plains and their utilization, Johnson (W. D.), 1.
  - Miocene mammals of South Dakota, Matthew and Gidley, 1.
  - Note on the western Tertiary, Sardeson, 5.
  - Oelrichs folio, Darton, 8.
  - Oligocene beds of the Bad Lands, Fraas, 1.
  - Origin of North Dakota lignites, Wilder, 5.
  - Origin of Oligocene and Miocene deposits of Great Plains, Hatcher, 11.
  - Osteology of Oxydactylus, Peterson, 1.
  - Prairie region of northeastern Colorado, Lakes, 32.
  - Report of State geologist of Nebraska, Barbour (E. H.), 8.
  - Scotts Bluff folio, Darton, 11.
  - Skeleton of Titanotherium dispar, Marsh, Hatcher, 7.
  - Sundance folio, Darton, 26.
  - Tertiary formations of the northern Great Plains, Darton, 12.
  - Tertiary terrane, new in Kansas geology, Adams (G. I.), 8.
- *Greenland.*
  - Bidrag till nordöstra Grönlands geologi, Nathorst, 1.
  - Tertiary fauna at Kap Dalton, Ravn, 1.
- *Gulf region.*
  - Age of Alabama white limestone, Casey, 2.
  - Dall's Tertiary fauna of Florida, Schuchert, 12.
  - Eocene outcrops in central Georgia, Harris, 5.
  - Geography and geology of Sabine River, La., Veatch, 2.

Tertiary—Continued.
Gulf region—Continued.
Geology along the Ouachita, La., Veatch, 3.
Geology of Mississippi embayment, Harris, 2.
Grand Gulf formation, Dall, 9.
Grand Gulf formation, Hilgard, 4.
Grand Gulf formation, Smith and Aldrich, 2.
Hills of Louisiana north of V. S. & P. Railroad, Lerch, 1.
Hills of Louisiana south of V. S. & P. Railroad, Lerch, 2.
Jackson outcrops on Red River, Casey, 1.
Lafayette and Columbia formations and their botanical features, Harper (R. M.), 2.
Oil fields of Texas-Louisiana Gulf coastal plain, Hayes and Kennedy, 1.
Oligocene of western Europe and southern United States, Maury, 1.
Portland-cement materials of Alabama, Smith (E. A.), 2.
Preliminary report upon Florida parishes of east Louisiana, Clendenin, 1.
Salines of north Louisiana, Veatch, 1.
Shell Bluff, Georgia, one of Lyell's original localities, Vaughan, 4.
Southern oil fields, Hager, 1.
Subterranean waters of Louisiana, Harris, 3.
Tertiary fauna of Florida, Dall, 8.
Tertiary of Sabine River, Dumble, 10.
Underground waters of Louisiana, Harris, 6.
Underground waters of Louisiana and Arkansas, Veatch, 7.
Underground waters of southern Louisiana, Harris, 8.
Mexico.
Criaderos de fierro de la hacienda de Vaquerias, Villarello and Böse, 1.
Estado de Tabasco, Laguerenne, 1.
Geología de Chiapas y Tabasco, Böse, 7.
Geología del valle de Chilpancingo, Ordoñez and Böse, 1.
Geological section in Guerrero, Hall (C. E.), 1.
Mississippi Valley region.
Evolution of lowlands of southeastern Missouri, Marbut, 1.
Fluorspar deposits of southern Illinois, Bain, 10.
Fossiliferous sandstone dikes in the Eocene of Tennessee and Kentucky, Glenn, 8.
Geological section in southern Illinois, Nickles, 2.
Geology of Oktibbeha County, Logan, 2.
Winoka gravels, Hays, 1.
Winoka gravels, Park (E. J.), 1.
New England and New York.
Brandon clays, Woodworth, 8.
Geological history of Charles River, Mass., Clapp, 1.

Tertiary—Continued.
New England and New York—Continued.
Geological relations of Brandon lignite, Dale, 6.
Pre-Pleistocene deposits at Third Cliff, Bowman (I.), 3.
Tertiary lignite of Brandon, Perkins, 17.

Ohio Valley region.
Patoka folio, Fuller and Clapp, 2.

Pacific coast region.
Berkeley Hills, Lawson and Palache, 1.
Californian Tertiary coral reef, Vaughan, 20.
Clealum iron ores, Smith and Willis, 1.
Coal deposits of Washington, Landes and Ruddy, 1.
Coal fields of Pacific coast, Smith (G. O.), 6.
Contribution to petrography of John Day Basin, Calkins, 1.
Coos Bay coal fields, Rockwell, 1.
Coos Bay folio, Diller, 4.
Correlation of John Day and Mascall, Merriam and Sinclair, 1.
Ellensburg folio, Smith (G. O.), 7.
Faunal relations of the Carrizo Creek beds, Arnold, 3.
Fossil flora of John Day Basin, Oregon, Knowlton, 14.
Fossil shells of John Day region, Stearns (R. E. C.), 3.
Geological reconnaissance across the Cascade Range, Smith and Calkins, 1.
Geological section of middle Coast ranges of California, Lawson (A. C.), 5.
Geological section of the Coast ranges, Osmont, 1.
Geological section through John Day Basin, Merriam (J. C.), 2.
Geology and physiography of central Washington, Smith (G. O.), 8.
Geology and water resources of Yakima County, Smith (G. O.), 3.
Geology of Salinas Valley, Nutter, 1.
Geology of the John Day Basin, Merriam (J. C.), 1.
Geology of Washington, Landes, 1.
Gold belt of Blue Mountains of Oregon, Lindgren, 4.
Great lava flood, Redway, 1.
John Day fossil beds, Merriam (J. C.), 3.
Klamath Mountain section, Diller, 11.
Marine Pliocene and Pleistocene of San Pedro, Arnold, 2.
Marine Pliocene and Pleistocene stratigraphy of coast of southern California, Arnold (D. and R.), 1.
Miocene diabase of the Santa Cruz Mountains, Haehl and Arnold, 1.
Miocene fauna in California, Merriam (J. C.), 10.
Miocene Foraminifera from Monterey shale, Bagg, 9.

Tertiary—Continued.
Pacific coast region—Continued.
Mount Diablo Range of California, Anderson (F. M.), 7.
Mount Stuart folio, Smith (G. O.), 13.
Neocene deposits of Klamath region, California, Hershey, 9.
Ore deposits of Monte Cristo, Spurr, 3.
Paleontology of Martinez group, Weaver, 1.
Physiographic features of Klamath Mountains, Anderson (F. M.), 2.
Pleistocene and Pliocene fossil shells, Rivers, 1.
Port Orford folio, Diller, 11.
Prehistoric California, Yates (L. G.), 1.
Reconnaissance of borax deposits of Death Valley and Mohave Desert, Campbell (M. R.), 4.
San Luis folio, Fairbanks, 7.
Sierra Madre near Pasadena, Claypole, 4.
Stratigraphic problems in the Cascades, Smith (G. O.), 15.
Stratigraphy of Coast ranges of California, Anderson (F. M.), 6.
Tertiary formations of southern California, Hershey, 10.
Topographic development of Klamath Mountains, Diller, 10.
Panama.
Geology of the Isthmus of Panama, Hershey, 5.
Philippine Islands.
Geology of the Philippine Islands, Becker, 1.

Rocky Mountain region.
Age of the Monument Creek formation, Darton, 23.
Aladdin folio, Darton and O'Harra, 1.
Copper deposits of the Encampment district, Spencer (A. C.), 10.
Cranial elements and dentitions of Titanotherium, Hatcher, 4.
Cretaceous and Lower Tertiary section in south central Montana, Douglass, 3.
Discovery of Torrejon mammals in Montana, Douglass, 6.
Eocene and earlier beds of Huerfano basin, Colorado, Hills, 2.
Fossil Mammalia of White River beds, Douglass, 3.
Fossil nut pine from Idaho, Knowlton, 4.
Fresh-water Tertiaries at Green River, Wyoming, Davis (W. M.), 51.
Geological reconnaissance in Montana and Idaho, Lindgren, 21.
Geology and water resources of Nez Perces County. Part I, Russell, 1.
Geology of Black Hills, Darton, 1.
Geology of Castle Rock region, Lee (W. T.), 2.
Geology of Idaho and Oregon, Russell, 8.

Tertiary—Continued.
Rocky Mountain region—Continued.
Geology of the Needle Mountains quadrangle, Cross and Howe, 3.
La Plata folio, Cross and Spencer, 1.
Marine fossils in the Titanothere beds, Loomis, 6.
Nampa folio, Lindgren and Drake, 1.
Neocene lake beds of Montana, Douglass, 1.
Note sur les phénomènes volcaniques Tertiaires de la chaine d'Absaroka, Hague, 1.
Origin of fine gold of Snake River, Bell (R.), 3.
Prospecting for oil, Lakes, 36.
Silver City folio, Lindgren and Drake, 2.
Silverton folio, Cross and Howe, 1.
Spanish Peaks folio, Hills, 1.
Sundance folio, Darton, 26.

Southwestern region.
Age of lavas of plateau region, Reagan, 2.
Austin folio, Hill and Vaughan, 1.
Beaumont oil field, Hill (R. T.), 9.
Colgate folio, Taff, 2.
Cretaceous and later rocks of Presidio and Brewster counties, Dumble, 12.
Fresh-water Tertiary of Texas, Gidley, 4.
Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
Geology and water resources of Oklahoma, Gould, 14.
Geology of Fort Apache region, Reagan, 3.
Geology of Oklahoma, Gould, 9.
Lake Otero, Herrick (C. L.), 6.
Geology of southwestern Texas, Dumble, 13.
Geology of the Antelope Hills, Sherwin, 1.
Oil and gas fields of western interior and Gulf coast, Adams (G. I.), 2.
Oil in Texas, Harris, 1.
Pelvic girdle of Zeuglodon Basilosaurus cetoides (Owen), Lucas (F. A.), 2.
Texas petroleum, Phillips (W. B.), 1.
Geology of the Cerrillos Hills, Johnson (D. W.), 4.
Geology of the Jemez-Albuquerque region, Reagan, 1.

West Indies.
Age des formations volcaniques de la Martinique, Giraud, 1.
Geological and physical development of Antigua, Spencer (J. W.), 1.
Geological and physical development of Anguilla, St. Martin, St. Bartholomew, and Sombrero, Spencer (J. W.), 3.
Geological and physical development of Guadeloupe, Spencer (J. W.), 2.

Tertiary—Continued.
West Indies—Continued.
Geological and physical development of the St. Christopher chain and Saba banks, Spencer (J. W.), 4.
Geological 'reconnaissance of Cuba, Hayes, Vaughan, and Spencer, 1.
Sangregrande borings, Trinidad, Guppy, 2, 3.
Tobagan fossils, Guppy, 7.
Windward Islands, Spencer (J. W.), 7.
General.
Geographical distribution of freshwater decapods, Ortmann, 3.
Oligocene Canidæ, Hatcher, 10.
Outlines of continents in Tertiary times, Matthew (W. D.), 18.
Recent zoopaleontology, Osborn, 20.
Was man in America in the Glacial period? Winchell (N. H.), 16.

Texas.
Accumulation of petroleum, Hayes (C. W.), 8.
Austin chalk underlying Waco, Prather, 2.
Austin folio, Hill and Vaughan, 1.
Bat guano caves in Texas, Phillips (W. B.), 4.
Beaumont oil field, Hill (R. T.), 5, 9.
Beaumont oil field, Phillips (W. B.), 2.
Chemistry of asphalt rocks, Harper (H. W.), 1.
Cinnabar deposits of Bog Bend province, Hill (R. T.), 8.
Clavilithes from the Texas Eocene, Johnson and Grabau, 1.
Coal fields of Texas, Ries, 14.
Coal, lignite, and asphalt rocks, Phillips (W. B.), 6, 12.
Coast prairie of Texas, Hill (R. T.), 1.
Composition and occurrence of petroleum, Mabery, 3.
Composition of Texas petroleum, Mabery, 1.
Corals of Buda limestone, Vaughan, 17.
Cretaceous and later rocks of Presidio and Brewster counties, Dumble, 12.
El Paso tin deposits, Weed, 4.
Excavation of Mastodon remains, Mackensen, 1.
Foraminiferal ooze, Udden, 9.
Fossils from Texas Cretaceous, Prather, 1.
Fresh-water Tertiary of Texas, Gidley, 4.
Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
Geography of Texas, Simonds, 4.
Geological horizon of petroleum, Fishback, 1.
Geologie und Petrographie der Apache Mountains, Osann, 1.
Geology of Beaumont oil field, Dumble, 2.
Geology of Shafter silver mine district, Udden (Johan A.), 11.

Texas—Continued.
Geology of southwestern Texas, Dumble, 13.
Gisements des minerais de mercure, Demaret, 2.
Glyptodont from Texas Pleistocene, Osborn, 17.
Great oil well near Beaumont, Dumble, 8.
Great oil well near Beaumont, Lucas (A. F.), 1.
Gypsum deposits in Texas, Hill (B. F.), 3.
Industrie du pétrole en Californie, Heurteau, 2.
Iron ores of east Texas, Dumble, 3, 6.
Iron ores of northeastern Texas, Eckel, 37.
Kansas-Oklahoma-Texas gypsum hills, Gould, 4.
Koprolithen des Perms von Texas, Neumayer, 1.
Kreide-Ammoniten von Texas, Lasswitz, 1.
Lead ore in Burnett County, Phillips (W. B.), 9.
Mart and Bluff meteorites, Charlton, 1.
Mercury minerals from Terlingua, Moses, 2.
Meteoreisen-Studien, Cohen, 4.
Meteoreisen von Cuernavaca und Iredell, Cohen, 8.
Meteorite from Allegan, Mich., and Mart, Tex., Merrill and Stokes, 1.
Minerals and mineral localities of Texas, Simonds, 1, 3.
Mollusca of Buda limestone, Shattuck, 8.
Morphology of the skull of Dimetrodon, Case, 11.
Myalina from Coal Measures of Texas, Whitfield, 2.
Native sulphur in El Paso County, Richardson (G. B.), 8.
New mercury mineral from Terlingua, Hillebrand, 8.
New quicksilver field in Brewster County, Phillips (W. B.), 8.
New quicksilver mining district, Kirk and Malcolmson, 1.
Oil and gas fields of western interior and Gulf coast, Adams (G. I.), 2.
Oil fields of Texas-Louisiana Gulf coastal plain, Hayes (C. W.), 13.
Oil fields of Texas-Louisiana Gulf coastal plain, Hayes and Kennedy, 1.
Oil fields of the Texas-Louisiana coastal plain, Fenneman, 7.
Oil fields of the Texas-Louisiana Gulf coast, Fenneman, 8.
Oil in Texas, Harris, 1.
Oligocene of western Europe and southern United States, Maury, 1.
Origin of natural mounds, Veatch, 10.
Paleontology of the Malone Jurassic formation, Cragin, 2.
Pelycosaur from Texas, Case, 10.

Texas—Continued.
Pelycosaurierreste von Texas, Broili, 4.
Permian life of Texas, Sternberg, 2.
Permische Stegocephalen und Reptilien aus Texas, Broili, 2.
Petroleum from the Beaumont field, Richardson and Wallace, 1.
Petroleum industry of Europe and America, Otsuka, 1.
Physical geography, geology, and resources of Texas, Dumble, 1.
Platygonus from Texas Pliocene, Gidley, 3.
Portland-cement resources of Texas, Taff, 5.
Quartz-feldspar-porphyry from Llano, Iddings, 3.
Quecksilbermineralien von Terlingua in Texas, Moses, 4.
Quicksilver deposits of Brewster County, Phillips (W. B.), 14.
Quicksilver district in Brewster County, Phillips (W. B.), 10.
Quicksilver industry in Brewster County, Phillips (W. B.), 11.
Quicksilver mines in Brewster County, Spalding, 1.
Reconnaissance in trans-Pecos Texas, Richardson (G. B.), 4.
Red sandstone of Diabolo Mountains, Dumble, 11.
Report of progress of Texas mineral survey, Phillips (W. B.), 7.
Results of late mineral research in Llano County, Hidden, 1.
Salt, gypsum, and petroleum in trans-Pecos Texas, Richardson (G. B.), 7.
Skull of Dinocyon from Miocene of Texas, Matthew (W. D.), 3.
Southern oil fields, Hager, 1.
Southwestern coal field, Taff, 5.
Stratigraphic notes on Malone Mountain, Stanton, 7.
Stratigraphic relations of Red Beds, Adams (G. I.), 11.
Stratigraphic relations of the Red Beds to Carboniferous and Permian in northern Texas, Adams (G. I.), 6.
Stratigraphic sequence in trans-Pecos Texas, Richardson (G. B.), 5.
Sulphur, oil, and quicksilver in trans-Pecos Texas, Phillips (W. B.), 5.
Terlingua quicksilver deposits, Brewster County, Hill (B. F.)
Terlingua quicksilver district, Kirk, 1.
Terlingua quicksilver deposits, Turner, 17.
Tertiary of Sabine River, Dumble, 10.
Texan oil deposits, Willey, 1.
Texas mercury minerals, Hill (B. F.), 2.
Texas oil-well fossil, Aldrich, 1.
Texas petroleum, Phillips (W. B.), 1.
Texas petroleum, Thiele, 1.
Tin deposits at El Paso, Weed, 15.
Trans-Pecos sulphur field, Caracristi, 1.

Texas—Continued.
Ueber Diacranodus texensis Cope, Broili, 3.
Upper Permian in western Texas, Girty, 2.
Vertebrates from Permian, Case, 5.
Volcanic origin of oil, Coste, 4.
Vorkommen der texanischen Quecksilbermineralien, Hill (B. F.), 4.

Triassic.
Alaska.
Geology of Copper River region, Mendenhall, 8.
Mesozoic section on Cook Inlet, Stanton and Martin, 1.
Stratigraphy and igneous rocks of Alaska, Emerson (B. K.), 6.
Appalachian region.
Mount Mitchell folio, Keith, 12.
Atlantic coast region.
Former extent of Newark system, Hobbs, 9.
Lodel Creek and Skippack Creek, Lyman, 2.
Mining in the Richmond coal basin, Virginia, Woodworth, 3.
New York City folio, Merrill and others, 1.
Canada.
Fossils, possibly Triassic, in bowlder clay of Kings County, Haycock, 2.
Geological history of Gaspereau Valley, Haycock, 1.
Geological record of Rocky Mountain region, Dawson, 2.
Geologie von Canada, Haas, 2.
Geology of Vancouver Island, Haycock, 3.
Geology of Vancouver Island, Webster, 1.
Kings and Hants counties, Nova Scotia, Fletcher, 2.
Synopsis of geology of Canada, Ami, 2.
Great Basin region.
Basin range structure of the Humboldt region, Louderback, 4.
Geology of Nevada, Spurr, 6.
Hurricane fault in southwestern Utah, Huntington and Goldthwait, 1.
Notes on geology of southeastern Arizona, Dumble, 7.
Status of Mesozoic floras, Ward (L. F.), 5.
Great Plains region.
Aladdin folio, Darton and O'Harra, 1.
Atlantosaur and Titanotherium beds of Wyoming, Peck, 4.
Edgemont folio, Darton and Smith, 1.
Geology and underground water resources of the central Great Plains, Darton, 18.
Gypsum deposits in Wyoming, Knight (W. C.), 9.
Hallopus, Baptanodon, and Atlantosaurus beds of Marsh, Williston, 25.
Hartville folio, Smith (W. S. T.), 1.
Newcastle folio, Darton, 14.

Triassic—Continued.
 Great Plains region—Continued.
  Oelrichs folio, Darton, 8.
  Red Beds of Black Hills, Richardson (G. B.), 2.
  Sundance folio, Darton, 26.
  Triassic and Jurassic strata of the Black Hills, Hovey (E. O.), 13.
 New England and New York.
  Nature's hieroglyphics, Lull, 4.
  Newark system of the Pomperaug Valley, Hobbs, 2.
  Physical geography and geology of Connecticut, Rice, 1.
  Wells of Triassic area of Connecticut Valley, Pynchon, 11.
 Pacific coast region.
  Border line between the Paleozoic and Mesozoic, Smith (J. P.), 1.
  Gold belt of Blue Mountains of Oregon, Lindgren, 4.
  Klamath Mountain section, Diller, 12.
  Marine sediments of eastern Oregon, Washburne, 1.
  Marine Trias of western America, Smith (J. P.), 5.
  San Luis folio, Fairbanks, 7.
  Triassic cephalopod genera, Hyatt and Smith, 1.
  Triassic Ichthyopterygia from California and Nevada, Merriam (J. C.), 4.
  Triassic Reptilia from northern California, Merriam (J. C.), 5.
 Rocky Mountain region.
  Aladdin folio, Darton and O'Harra, 1.
  Border line between the Paleozoic and Mesozoic, Smith (J. P.), 1.
  Copper deposits of the Encampment district, Spencer (A. C.), 10.
  Dinosaur beds of the Grand River Valley, Riggs, 1.
  Geology and ore deposits of Elkhorn mining district, Montana, Weed, 5.
  Geology of Black Hills, Darton, 1.
  Geology of the Boulder district, Fenneman, 10.
  Geology of the Hellgate and Big Blackfoot valleys, Winchell (N. H.), 25.
  Hallopus, Baptanodon, and Atlantosaurus beds of Marsh, Williston, 25.
  La Plata folio, Cross and Spencer, 1.
  Marine Trias of western America, Smith (J. P.), 5.
  Red Beds of Colorado, Cross and Howe, 2, 4.
  Sundance folio, Darton, 26.
  Stratigraphy of Black Hills, Bighorn Mountains, and Rocky Mountain front range, Darton, 16.
  Trias in northeastern Oregon, Lindgren, 3.
  Triassic and Jurassic strata of the Black Hills, Hovey (E. O.), 6.
  Triassic cephalopod genera, Hyatt and Smith, 1.

Triassic—Continued.
 Southwestern region.
  Fossils from the Red Beds, Gould, 1.
  Geography and geology of Black and Grand prairies, Hill (R. T.), 3.
  Geology and underground water conditions of the Jornada del Muerto, Keyes, 49.
  Geology of the Jemez-Albuquerque region, Reagan, 1.
  Gypsum deposits in New Mexico, Herrick (H. N.), 1.
  Jurassic horizon around the southern end of the Rocky Mountains, Keyes, 51.
  Kansas-Oklahoma-Texas gypsum hills, Gould, 4.
  Triassic system in New Mexico, Keyes, 50.
 General.
  Ueber Pelecypoden-zonen in der Trias Nord-Amerikas, Smith (J. P.), 2.

Trinidad.
  Growth of Trinidad, Guppy, 8.
  Komuto shell-bed, Guppy, 6.

Utah.
  Areal geology of the Bingham mining district, Keith, 13.
  Bingham mining camp, Emmons, 1.
  Cactus copper mine, Emmons (S. F.), 21.
  Cement materials and industry of the United States, Eckel, 34.
  Coal mining at Sunnyside, Harrington (D.), 1.
  Colossal bridges of Utah, Dyar, 1.
  Colossal bridges of Utah, Winchell (N. H.), 22.
  Copper deposits of Beaver River Range, Crowther, 1.
  Delamar and Horn-Silver mines, Emmons (S. F.), 3.
  Economic geology of the Bingham district, Boutwell, 12.
  Economic geology of the Bingham mining district, Emmons (S. F.), 22.
  Eruption of rhyolite, Gilbert, 9.
  Genesis of ore deposits at Bingham, Utah, Boutwell, 14.
  Geology of Bingham Canyon, Kemp, [illegible].
  Geology of Mercur, Dern, 1.
  Geology of Park City district, Bell (R. N.), 4.
  Geology of Utah, Talmage, 2.
  Gold production of North America, Lindgren, 16.
  Great Salt Lake Basin, Lakes, 37.
  Gypsum, Diehl, 1.
  Gypsum deposits in Utah, Boutwell, 3.
  Hurricane fault in southwestern Utah, Huntington and Goldthwait, 1.
  Hurricane fault in the Toquerville district, Huntington and Goldthwait, 2.
  Iron ores in the Uinta Mountains, Boutwell, 5.
  Iron ores in Utah, Leith, 11.

Utah—Continued.

- Iron ores of the Uinta Mountains, Warwick, 1.
- Joint veins, Gilbert, 2, 8.
- Little Cottonwood granite body of Wasatch Mountains, Emmons (S. F.), 9.
- Mineral crest, Emmons (S. F.), 12.
- Mineral crest, Jenney, 2, 3.
- Mineral crest, Smith (G. O.), 11.
- Mineral resources of the Uinta Mountains, Berkey, 4.
- Mineralogical notes, Headden, 4.
- Mountain ranges of Great Basin, Davis (W. M.), 46.
- Natural gas near Salt Lake City, Richardson (G. B.), 6.
- Notes on two desert mines, Emmons (S. F.), 2.
- Oil and asphalt prospects in Salt Lake basin, Utah, Boutwell, 11.
- Ore deposits of Bingham, Boutwell, 2, 10, 13.
- Origin of magnetic iron ores of Iron County, Jennings (E. P.), 2.
- Paleontology of the Bingham mining district, Girty, 12.
- Park City mining district, Boutwell, 1, 4.
- Plateau province of Utah and Arizona, Davis (W. M.), 45.
- Radium in an American ore, Phillips (A. H.), 1.
- Reconnaissance of the Uintah reservation, Berkey, 5.
- Red beryl from Utah, Hillebrand, 5.
- Report on Park City mining district, Boutwell, 8.
- Rock gypsum at Nephi, Boutwell, 6.
- Rocky Mountain coal fields, Storrs (L. S.), 1.
- Salt industry in Utah and California, Eckel, 26.
- Slate deposits of California and Utah, Eckel, 24.
- Stateline mining district, Smith (G. H.), 1.
- Stratigraphy of Uinta Mountains, Berkey, 8.
- Vanadium and uranium in southeastern Utah, Boutwell, 9.
- Wasatch, Canyon, and House ranges, Davis (W. M.), 59.

Vermont.

- Analysis of Washington marble, Richardson (C. H.), 1.
- Asbestos region in northern Vermont, Kemp, 3, 6, 14.
- Brandon clays, Woodworth, 8.
- Cement materials and industry of the United States, Eckel, 34.
- Concretions from Connecticut Valley, Sheldon, 1.
- Copper deposits of Orange County, Smyth and Smith, 1.
- Copper mines of Vermont, Weed, 28.

Vermont—Continued.

- Correlation of Piedmont formations, Mathews, 6.
- Fauna of the Chazy limestone, Raymond (P. E.), 7.
- Feld work at Larrabees Point, Shimer, 3.
- Fossil fruits and lignites of Brandon, Vt., Knowlton, 11.
- Fossil fruits of Tertiary lignite of Brandon, Perkins, 13.
- Geological relations of Brandon lignite, Dale, 6.
- Geology of Ascutney Mountain, Daly, 7.
- Geology of Grand Isle, Perkins, 1.
- Geology of Grand Isle County, Perkins, 11.
- Geology of the Taconic Range, Dale, 3.
- Geology of Vermont, Seely, 2.
- Glacial and post-Glacial history of the Hudson and Champlain valleys, Peet, 1.
- Glaciation of the Green Mountains, Hitchcock (C. H.), 7, 8.
- Granite of Barre, Finlay (G. I.), 1, 3.
- Hydrology of Vermont, Perkins, 14.
- Lignite of Brandon and its fossils, Perkins, 12.
- List of reports on the geology of Vermont, Perkins, 4.
- List of works on the geology of Vermont, Perkins, 9.
- Marble, slate, and granite industries, Perkins, 1.
- Mineral industries, Perkins, 6.
- Mineral industries and geology of certain areas of Vermont, Perkins, 4.
- Mineral resources of Vermont, Perkins, 2, 10, 16.
- Occurrence of asbestos, Kemp, 8.
- Petrographic description of dikes of Grand Isle, Shimer, 1.
- Petrography of Belvidere Mountain deposits, Marsters, 3.
- Quartz veins in Maine and Vermont, Smith (G. O.), 14.
- Serpentine belt of Lamoille and Orleans counties, Marsters, 2.
- Serpentine of Belvidere Mountain, Marsters, 4.
- Sketch of the life and work of Augustus Wing, Seely, 1.
- Slate investigations during 1904, Dale, 8.
- Sponges of Chazy formation, Seely, 3.
- Stromatoceria of Isle La Motte, Seely, 5.
- Structural details in Green Mountain region, Dale, 1.
- Taconic physiography, Dale, 9.
- Terranes of Orange County, Richardson (C. H.), 2.
- Tertiary lignite of Brandon, Perkins, 17.
- Triassic rocks of the Connecticut Valley as a source of water supply, Fuller (M. L.), 18.

Vermont—Continued.
- Underground waters of Vermont, Perkins, 15.
- Water resources of Fort Ticonderoga quadrangle, Dale, 7.
- Water resources of Taconic quadrangle, Taylor (F. B.). 5.
- Water resources of Vermont, Perkins, 8.

Virginia.
- Age of the Wise and Harlan formations of southwestern Virginia, White, 23.
- Analysis of emery, Miller (W. W.), 1.
- Arsenic mines at Brinton, Cowan, 1.
- Atlantic coast Triassic coal field, Woodworth, 4.
- Big Stone Gap coal field, Pultz, 1.
- Cambro-Ordovician limestones of the Valley of Virginia, Campbell (H. D.), 1.
- Carboniferous of the Appalachian basin, Stevenson (J. J), 6.
- Cement materials of the valley of Virginia, Bassler, 3.
- Cement resources of the valley of Virginia, Catlett, 3.
- Clays of the United States, Ries, 6.
- Coals of Pocahontas field, Fowler, 1.
- Contributions to Devonian paleontology, Williams and Kindle, 1.
- Copper deposits of Appalachian States, Weed, 17.
- Copper deposits of eastern United States, Weed, 37.
- Copper deposits of southern United States, Weed, 2.
- Copper-bearing rocks of Virgilina copper district, Watson (T. L.), 6.
- Correlation of the Potomac formation, Ward (L. F.), 3.
- Gisements de minerais de zinc, Demaret, 1.
- Gypsum deposits in Virginia, Eckel, 23.
- Lead and zinc deposits, Watson (T. L.), 17.
- Lower Carboniferous of Appalachian basin, Stevenson (J. J.), 4.
- Meteoric iron from Augusta County, Campbell and Howe, 1.
- Mining in the Richmond coal basin, Woodworth, 3.
- Norfolk folio, Darton, 7.
- Northern coals of Big Sandy basin, Althouse, 1.
- Occurrence of unakite, Phalen, 2.
- Optische Orientirung des Albit von Amelia, Becke, 1.
- Origin of Oriskany limonites, Johnson (J. E.), 1.
- Portland-cement resources of Virginia, Bassler, 2.
- Report on various collections of fossil plants from the older Potomac of Virginia and Maryland, Fontaine, 5.
- Richmond coal basin, Gay, 1.

Virginia—Continued.
- Rutile mining in Virginia, Merrill (G. P.), 6.
- Salt and gypsum deposits of southwestern Virginia, Eckel, 19.
- Sandstone from Augusta County, Miller (W. W.), 2.
- Slate investigations during 1904, Dale, 8.
- Subdivisions of Shenandoah limestone, Bassler, 4.
- Underground waters of Virginia, Darton and Fuller, 3.
- Virginia anthracite coal, Randolph (L. S.), 1.
- Washington folio, Darton and Keith, 1.
- Zinc mining and smelting in southwestern Virginia, Higgins, 1.

Washington.
- Abandoned stream gaps in northern Washington, Smith (G. O.), 12.
- Anticlinal mountain ridges in central Washington, Smith (G. O.), 10.
- Basalt mounds of the Columbia lava, Piper, 1.
- Bibliography of literature referring to geology of Washington, Arnold, 1.
- Building and ornamental stones of Washington, Shedd, 2.
- Cement materials and industry of the United States, Eckel, 34.
- Clay deposits of Washington, Landes, 5.
- Clealum iron ores, Smith and Willis, 1.
- Coal deposits of Washington, Landes, 3.
- Coal deposits of Washington, Landes and Ruddy, 1.
- Coal fields of Cook Inlet, Alaska, and Pacific coast, Kirsopp, 1.
- Coal fields of Pacific coast, Smith (G. O.), 6.
- Coal in Clallam County, Arnold, 5.
- Copper ores in the Cascade Mountains, Stretch, 4.
- Discussion of Clealum iron ores, Courtis, 1.
- Dumortierite, Schaller, 5, 7.
- Ellensburg folio, Smith (G. O.), 7.
- Field notes on Mount Rainier, Landes, 6.
- Fossil plants from State of Washington, Knowlton, 8.
- Geological reconnaissance across the Cascade Range, Smith and Calkins, 1.
- Geology and physiography of central Washington, Smith (G. O.), 8.
- Geology and water resources of east-central Washington, Calkins, 3.
- Geology and water resources of Yakima County, Smith (G. O.), 3.
- Geology of Mount Rainier, Smith (G. O.), 1.
- Geology of Washington, Landes, 1.
- Glacial drift in the Dakotas, Montana, Idaho, and Washington, Upham, 27.

Washington—Continued.
- Glacial drift in Washington, Upham, 28.
- Glaciers of Mount Hood and Mount Adams, Reid (H. F.), 17.
- Gold mining in central Washington, Smith (G. O.), 9.
- Gold placers of the coast of Washington, Arnold, 4.
- Gold production of North America, Lindgren, 16.
- Independent mine at Silverton, Stretch, 2.
- Iron ores of Washington, Shedd, 1.
- Lake Chelan, Fairbanks, 4.
- Lake Chelan and its glacier, Gannett, 3.
- Mammals in the swamps of Whitman County, Sternberg, 3.
- Metalliferous resources of Washington, Landes and others, 1.
- Molybdenite at Crown Point, Crook, 3.
- Mount Baker mining district, Smith (G. O.), 4.
- Mount Stuart folio, Smith (G. O.), 13.
- Mounts Hood and Adams and their glaciers, Reid (H. F.), 6.
- Nonmetalliferous resources of Washington, Landes, 2.
- Ore deposits of Monte Cristo, Spurr, 3.
- Ore deposits of Monte Cristo, Washington, Winchell (H. V.), 1.
- Ores of the Republic mine, Chatard and Whitehead, 1.
- Physiography and deformation of the Wenatchee-Chelan district, Willis, 11.
- Pseudo-serpentine from Stevens County, Clarke (F. W.), 2, 5.
- Reconnaissance of Mount Hood and Mount Adams, Reid (H. F.), 4.
- Silverton mining district, Stretch, 1.
- Stratigraphic problems in the Cascades, Smith (G. O.), 15.
- Underground waters of Washington, Landes, 4.
- Water resources of Washington, Byers (H. G.), 1.
- Water resources of Washington, Heine, 1.
- Water resources of Washington, Ruddy, 1.

West Indies.
- Activity of Mont Pelée, Heilprin, 4.
- Age des formations volcaniques de la Martinique, Giraud, 1.
- Analyses of volcanic ejecta from Martinique and St. Vincent, Hillebrand, 1.
- Analysis of dust from La Soufrière, Bridgford, 1.
- Antillean volcanoes, McGee, 3.
- Ausbruchsperiode des Mont Pelée, Stübel, 2.
- Bibliography of West Indian eruptions, Hovey (E. O.), 32.
- Bitumen in Cuba, Vaughan, 8.

West Indies—Continued.
- Bituminous deposits of Cardenas, Cuba, Peckham (H. E.), 1.
- Cendres des éruptions de la Montagne Pelée, Lacroix, 2.
- Changes in nomenclature of West Indian corals, Vaughan, 13.
- Composition chimique des poussières volcaniques de la Martinique, Gillot, 1.
- Composition des cendres projetées par la Montagne Pelée, Michel-Lévy, 2.
- Composition des gaz des fumerolles du Mont Pelée, Gautier, 1.
- Copper mines near Havana, Weed, 34.
- Copper mines of Cobre, Santiago de Cuba, Moffet, 1.
- Copper mines of Santa Clara Province, Cuba, Vaughan, 6.
- Cordiérite dans les produits éruptifs de la Montagne Pelée, Lacroix, 17.
- Cuban fossil mammals, Vaughan, 9.
- Dominica, Sapper, 12.
- Dust from Soufrière, Bonney, 5.
- Earliest Tertiary coral reefs in the Antilles and United States, Vaughan, 10.
- Enclaves basiques des volcans de la Martinique, Lacroix, 18.
- Enclaves des andésites de Montagne Pelée, Lacroix, 6.
- Erosion phenomena in St. Vincent and Martinique, Hovey (E. O.), 35.
- Erosion phenomena on Mont Pelée and Soufrière, Hovey (E. O.), 24.
- Erosion phenomena on the islands of St. Vincent and Martinique, Hovey (E. O.), 30.
- Éruption de la Martinique, Lacroix and others, 5.
- Éruption de la Montagne Pelée, Lacroix, 13.
- Éruption de la Montagne Pelée, Michel-Lévy, 1.
- Éruption du volcan de Saint-Vincent, Lacroix, 15.
- Eruption of Pelée, Jaggar, 6, 8.
- Éruption volcanique à la Martinique, Thierry, 1.
- Éruptions de Saint-Vincent, Lacroix, 19.
- Éruptions des nuages de la Montagne Pelée, Lacroix, 12.
- Eruptions of La Soufrière, St. Vincent, in May, 1902, Hovey (E. O.), 10.
- Eruptions of Mont Pelée and the Soufrière, Hovey (E. O.), 33.
- Eruptions of Soufrière, Anderson and Flett, 2.
- Eruptions of 1902 of La Soufrière, St. Vincent, and Mont Pelée, Martinique, Hovey (E. O.), 9.
- Éruptions volcaniques de la Martinique, Lacroix, 11.
- État actuel de la Soufrière de la Guadeloupe, Lacroix, 14.

West Indies—Continued.
- État actuel du volcan de la Montagne Pelée, Lacroix, 9.
- Evolution of the Antilles, Falconer, 2.
- Examination of ash that fell on Barbados after eruption of St. Vincent, Flett, 1.
- Field notes of a geologist in Martinique and St. Vincent, Jaggar, 2.
- Foraminifera of Trinidad, Guppy, 4.
- Fossil corals from the elevated reefs of Curaçao, Aruba, and Bonaire, Vaughan, 2.
- Fossil land shells of Bermuda, Gulick, 1.
- Fossils of the Bahama Islands, Dall, 15, 16.
- Gaz des fumerolles du Mont Pelée, Moissan, 1.
- Geography of Cuba, Vaughan and Spencer, 1.
- Geological and physical development of Antigua, Spencer (J. W.), 1.
- Geological and physical development of Anguilla, St. Martin, St. Bartholomew, and Sombrero, Spencer (J. W.), 3.
- Geologic and physiographic history of the Lesser Antilles, Hill (R. T.), 13.
- Geological age of the West Indian volcanic foundation, Spencer (J. W.), 9.
- Geological and physical development of Barbados, Spencer (J. W.), 6.
- Geological and physical development of Dominica, Spencer (J. W.), 5.
- Geological and physical development of Guadeloupe, Spencer (J. W.), 2.
- Geological and physical development of the St. Christopher chain and Saba banks, Spencer (J. W.), 4.
- Geological features of Azores, Howarth, 1.
- Geological notes on the Marbela Manjak mine, Guppy, 5.
- Geological reconnaissance of Cuba, Hayes, Vaughan, and Spencer, 1.
- Geological relationship of volcanoes of West Indies, Spencer (J. W.), 8.
- Geologie Haitis, Tippenhauer, 1, 2.
- Geology and physiography of Cuba, Hamilton, 2.
- Gigantic fossil Lucina, Dall, 3.
- Gold in Santo Domingo, Garrison, 4.
- Grande Soufrière of Guadeloupe, Hovey (E. O.), 28, 31.
- Guadeloupe, Sapper, 14.
- History of the Caribbean Islands, Frazer, 8.
- Hydrology of Cuba, Fuller (M. L.), 19.
- Inner cone of Mont Pelée, Hovey (E. O.), 23.
- Insel Grenada, Sapper, 8.
- Insel Montserrat, Sapper, 11.
- Insel S. Lucia, Sapper, 10.
- Inseln Nevis und S. Kitts, Sapper, 17.

West Indies—Continued.
- Iron ores of Cuba, Spencer (A. C.), 1.
- Krater der Soufrière von St. Vincent, Sapper, 16.
- Manganese deposits of Santiago, Spencer (A. C.), 8.
- Manganese deposits of Santiago Province, Cuba, Spencer (A. C.), 3.
- Manganese mining in Cuba, Chibas, 1.
- Martinique, Sapper, 15.
- Martinique and St. Vincent; preliminary report upon the eruptions of 1902, Hovey (E. O.), 12.
- Martinique and St. Vincent revisited, Hovey (E. O.), 18.
- Martinique und St. Vincent, Stübel, 1.
- Martinique und sein Vulkanismus, Deckert, 2.
- Mechanism of the Mont Pelée spine, Gilbert, 16.
- Mineral deposits of Santiago, Cuba, Souder, 1.
- Mineral deposits of Santiago, Cuba, Wenstrom, 1.
- Mission de la Martinique, Lacroix, 4, 16.
- Mont Pelée, Hovey (E. O.), 20, 26.
- Mont Pelée, Jaggar, 4.
- Mont Pelée and tragedy of Martinique, Heilprin, 3.
- Mont Pelée—the eruptions of August 24 and 30, 1902, Heilprin, 7.
- La Montagne Pelée et ses éruptions, Lacroix, 20.
- Nature of Pelée tower, Heilprin, 8.
- Nature of phenomena of eruption of Mont Pelée, Divers, 1.
- New cone and obelisk of Mont Pelée, Hovey (E. O.), 29.
- New cone of Mont Pelée, Hovey (E. O.), 17.
- Next eruption of Pelée, Jaggar, 3.
- Obelisk of Mont Pelée, Heilprin, 6.
- Obelisk of Mont Pelée, Hovey (E. O.), 21.
- Obelisk of Montagne Pelée, Heilprin, 5.
- Observations minéralogiques faites sur les products de l'incendie de Saint-Pierre, Lacroix, 10.
- Observations sur les éruptions volcaniques, Lacroix, 7.
- Occurrence of gold and coal in Trinidad, Guppy, 1.
- Peculiar character of eruption of Mont Pelée, Verrill, 1.
- Pelée and the evolution of the Windward Archipelago, Hill (R. T.), 16.
- Pelée obelisk, Russell, 12, 22.
- Pelée's obelisk, Argall (P. H.), 1.
- Physical history of the Windward Islands, Hill (R. T.), 18.
- Physiography and geology of Bahama Islands, Shattuck and Miller, 1.
- Porto Rico, its topography and aspects, Wilson (H. M.), 1.

West Indies—Continued.
- Preliminary report on recent eruption of Soufrière in St. Vincent, and of a visit to Mont Pelée, in Martinique, Anderson and Flett, 1.
- Présence de l'argon dans les gaz des fumerolles de la Guadeloupe, Moissan, 2.
- Recent eruptions of Mont Pelée, Nicholls, 1.
- Recent tuffs of the Soufrière, Howe (E.), 2.
- Recent volcanic eruptions, Anderson (F.), 1.
- Recent volcanic eruptions in West Indies, Milne, 1.
- Recent volcanic eruptions in West Indies, Russell, 3.
- Roches volcaniques de la Martinique, Lacroix, 1, 3.
- S. Eustatius und Saba, Sapper, 13.
- St. Vincent, Sapper, 9, 18.
- St. Vincent, eruptions of 1902, Hovey (E. O.), 36.
- Sangregrande borings, Trinidad, Guppy, 2, 3.
- Secondary phenomena of West Indian volcanic eruptions, Curtis, 1.
- Soufrière of St. Vincent, Hovey (E. O.), 27.
- Spine on Pelée, Jaggar, 7.
- Stony corals of the Porto Rican waters, Vaughan, 3.
- Tower of Pelée, Heilprin, 9, 10.
- Union of Cuba with Florida, Spencer (J. W.), 11.
- Visit to Martinique and St. Vincent after the great eruptions of May and June, 1902, Hovey (E. O.), 11.
- Volcanic action and the West Indian eruptions of 1902, Lobley, 1.
- Volcanic disturbances in the West Indies, Hill (R. T.), 6.
- Volcanic dust, Falconer, 1.
- Volcanic dust and sand from St. Vincent, Diller and Steiger, 1.
- Volcanic dust from West Indies, Porter (F. B.), 1.
- Volcanic dust from West Indies, Teall, 1.
- Volcanic dust of Mont Pelée, Griffiths, 1.
- Volcanic eruptions in the West Indies, Anderson (F.), 2.
- Volcanic eruptions in the West Indies, Burns, 1.
- Volcanic eruptions on Martinique and St. Vincent, Russell, 4.
- Volcanic rocks of Martinique and St. Vincent, Diller, 7.
- Volcanoes of Caribbean Islands, Hovey (E. O.), 22.
- Volcanoes of Martinique, Guadeloupe, and Saba, Hovey (E. O.), 44.
- Volcanoes of St. Vincent, St. Kitts, and Statia, Hovey (E. O.), 45.
- Vulcangebiete Mittelamerikas und Westindiens, Sapper, 24.
- Vulkan, Haas, 1.
- Vulkane Pelé, Krakatau, Etna, Vesuv, Kewitsch, 1.
- Vulkane von Guatemala und Salvador, Sapper, 1.
- Vulkanischen Kleinen Antillen und die Ausbrüche der Jahre 1902 und 1903, Sapper, 19.
- Vulkanische Asche vom Vulcan Soufrière, Klein, 1.
- Vulkanischen Ausbrüche auf den Kleinen Antillen, Hoernes, 1.
- Vulkanischen Ereignisse in Westindien, Bergeat, 1.
- Vulkanske udbrud i Vestindien, Kolderup, 3.
- West Indian eruptions of 1902, Curtis, 2.
- West Indian volcanic eruptions, Milne, 2.
- Windward Islands, Spencer (J. W.), 7.

West Virginia.
- Anthracite coal field west of Washington, White (D.), 12.
- Anthracite of Third Hill Mountain, Griffith, 2, 3.
- Appalachian coal field, White (I. C.), 7.
- Bibliography of works upon the geology and natural resources of West Virginia, Brown (S. S.), 1.
- Carboniferous of the Appalachian basin, Stevenson (J. J.), 6.
- Cement materials and industry of the United States, Eckel, 34.
- Charbons gras de la Pennsylvanie et de la Virginie occidentale, Heurteau, 1.
- Charleston folio, Campbell (M. R.), 2.
- Clays of the United States, Ries, 6.
- Coal in the Nicholas quadrangle, Ashley, 7.
- Coals of Pocahontas field, Fowler, 1.
- Contributions to Devonian paleontology, Williams and Kindle, 1.
- Discovery of a musk-ox skull, Hatcher, 12.
- Drainage modifications in Ohio, West Virginia, and Kentucky, Tight, 4.
- Geological horizon of the Kanawha black flint, White (I. C.), 4.
- Geological map of West Virginia, White (I. C.), 1.
- Geology of West Virginia, White (I. C.), 2, 3.
- Kanawha and New River coal fields of West Virginia, Robinson (N.), 1.
- List of fossils from lower half of Conemaugh formation near Morgantown, White (I. C.), 5.
- Lower Carboniferous of Appalachian basin, Stevenson (J. J.), 4.
- Map of coal, oil, and gas in West Virginia, White (I. C.), 8.
- Meadow Branch coal field, Campbell (M. R.), 17.

West Virginia—Continued.
Petroleum and natural gas, White (I. C.), 9.
Properties of Summit Coal Company in Marshall County, Von Rosenberg, 1.
Pure limestone in Berkeley County, Stose, 2.
Raleigh folio, Campbell (M. R.), 5.
Siluric and Devonic Cystidea and Camarocrinus, Schuchert, 11.
Slate industry at Martinsburg, Dale, 2.
Slate investigations during 1904, Dale, 8.
Steinkohlengebiete von Pennsylvanien und Westvirginien, Simmersbach, 1.
Trip to West Virginia, Poole, 9.
Tug River coal field, Payne, 1.
Underground waters of West Virginia, Fuller (M. L.), 26.
Variation and equivalence of the Charleston sandstone, Campbell (M. R.), 10.
Water resources of Frostburg and Flintstone quadrangles, Martin (G. C.), 10.
Water resources of Pawpaw and Hancock quadrangles, Stose and Martin, 1.
Water resources of the Nicholas quadrangle, Ashley, 8.

Wisconsin.
Age of St. Croix Dalles, Upham, 31.
Baraboo iron ore, Hille, 2.
Baraboo iron ore, Winchell (N. H.), 23.
Baraboo iron-bearing district of Wisconsin, Weidman, 5.
Baraboo iron range, Rohn, 1.
Cement materials and industry of the United States, Eckel, 34.
Clays and clay industries, Buckley, 1.
Clays of the United States, Ries, 6.
Copper-bearing rocks of Douglas County, Grant (U. S.), 1.
Current notes on physiography, Davis (W. M.), 34.
Dalles of the St. Croix, Berkey, 1.
Delavan lobe of Wisconsin stage of glaciation, Alden, 3.
Drumlins of southeastern Wisconsin, Alden, 4.
Eisenerzlagerstätten am Lake Superior, Macco, 1.
Emigrant diamonds in America, Hobbs, 8.
Examples of joint-controlled drainage, Hobbs, 26.
Field work in Wisconsin lead and zinc district, Grant (U. S.), 8.
Forest beds of the lower Fox, Lawson (P. V.), 1.
Fossil Unio from Wisconsin, Wagner, 2.
Gisements de minerals de zinc, Demaret, 1.
Glacial features of the St. Croix Dalles region, Chamberlin (R. T.), 1.
Glacial gold in Wisconsin, Thomas, 2.
Glacial lake Nicolet, Upham, 17,

Wisconsin—Continued.
Hamilton formation at Milwaukee, Teller, 1.
Highway construction in Wisconsin, Buckley, 3.
Interglacial clays of Grantsburg, Berkey, 6.
Iron ore deposits of the Lake Superior region, Van Hise, 2.
Iron ores of the Baraboo district, Weidman, 6.
Junction of Lake Superior sandstone and Keeweenawan traps, Grant (U. S.), 2.
Lake Superior geological work, Van Hise, 14.
Lake Superior iron-ore deposits, Grant (U. S.), 6.
Lakes of southeastern Wisconsin, Fenneman, 1.
Lead and zinc deposits of Mississippi Valley, Van Hise and Bain, 1.
Lead and zinc deposits of Ozark region, Van Hise, 5.
Lead and zinc deposits of southwestern Wisconsin, Grant (U. S.), 5.
Lower Silurian formations of Wisconsin and Minnesota, Sardeson, 8.
Magnesian series of the northwestern States, Hall (C. W.), 10.
Meteorite from Algoma, Hobbs, 15.
Meteorite from Algoma, Kewaunee County, Hobbs, 13.
Occurrence of fayalite in Wisconsin, Weidman, 4.
Paleozoic coral reefs, Grabau, 10.
Physiographical field notes in the town of Wauwatosa, Bruncken, 1.
Physiography of Wisconsin, Collie, 2.
Pre-Potsdam peneplain of pre-Cambrian of north-central Wisconsin, Weidman, 1.
Report of director of the survey, Birge, 4.
Report of superintendent of the survey, Birge, 1–3.
Report on Lake Superior region, Van Hise and others, 1.
So-called alkali spots of drift-sheets, Willcox, 2.
Soils of Wisconsin, Weidman, 3.
Sources of water supply in Wisconsin, Kirchoffer, 1.
Summary of Lake Superior geology, Leith, 14.
Underground waters of Wisconsin district, Schultz, 1.
Water resources of the Mineral Point quadrangle, Grant (U. S.), 11.
Wisconsin shore of Lake Superior, Collie, 1.
Wisconsin zinc fields, Nicholson, 1.
Zinc and lead deposits, Grant (U. S.), 9.
Zinc and lead deposits of north Arkansas, Branner, 2.

Wisconsin—Continued.
Zinc and lead mines near Dodgeville, Ellis (E. E.), 1.
Zinc and lead ores of southwestern Wisconsin, Grant (U. S.), 10.

Wyoming.
Aladdin folio, Darton and O'Harra, 1.
Alkali deposits of Wyoming, Read, 3.
Alkali lakes and deposits, Knight and Slosson, 1.
Armadillo from middle Eocene, Osborn, 30.
Astrodon (Pleurocœlus) in the Atlantosaurus beds of Wyoming, Hatcher, 16.
Atlantosaur and Titanotherium beds, Peck, 4.
Baked clays and natural slags in eastern Wyoming, Bastin, 1.
Bentonite deposits of Wyoming, Fisher (C. A.), 6.
Bonanza, Cottonwood, and Douglas oil fields, Knight and Slosson, 4.
Cement materials and industry of the United States, Eckel, 34.
Ceratopsia from the Laramie, Wyo., Hatcher, 22.
Coal fields of Uinta County, Knight (W. C.), 7.
Coal of the Bighorn basin, Fisher (C. A.), 5.
Coal of the Black Hills, Darton, 20.
Coal resources of Wyoming, Trumbull, 1.
Copper deposits of the Encampment district, Spencer (A. C.), 10.
Copper mining in the Encampment and Pearl districts, Read, 4.
Crocodile from Wyoming Jurassic, Holland, 2.
Description of Bates Hole, Knight (W. C.), 1.
Deposit of titanic iron ore, Lindgren, 9.
Dinosaur Trachodon annectens, Lucas (F. A.), 21.
Discovery of teeth in Baptanodon, Gilmore, 1.
Dutton, Rattlesnake, Arago, Oil Mountain, and Powder River oil fields, Knight and Slosson, 2.
Fore limb and manus of Brontosaurus, Hatcher, 8.
Fossil turtles of the Bridger basin, Hay, 22.
Fresh-water Tertiaries at Green River, Davis (W. M.), 51.
Geologische Streifzüge durch die Prärien und Felsengebirge Nordamerikas, Fraas, 2.
Geology and mineral resources, Beeler, 3.
Geology and underground water resources of the central Great Plains, Darton, 18.
Geology and water resources of the Patrick and Goshen Hole quadrangles, Adams (G. I.), 4.

Wyoming—Continued.
Geology of Black Hills, Darton, 1.
Glaciation in Bighorn Mountains, Salisbury and Blackwelder, 1.
Gold production of North America, Lindgren, 16.
Grand Encampment copper district, Lakes, 64.
Gypsum deposits in Wyoming, Knight (W. C.), 9.
Hallopus, Baptanodon, and Atlantosaurus beds of Marsh, Williston, 25.
Hartville folio, Smith (W. S. T.), 1.
Hyopsodidæ of Wasatch and Wind River basins, Loomis, 7.
Igneous rocks of the Aladdin quadrangle, Smith (W. S. T.), 6.
Igneous rocks of the Sundance folio, Smith (W. S. T.), 5.
Iron mines of Hartville, Chance, 2.
Jurassic dinosaurs, Gratacap, 5.
Jurassic stratigraphy in Wyoming, Loomis, 2.
Lagerstätten titanhaltigen Eisenerzes im Laramie range, Kemp, 31.
Laramie cement plaster, Slosson and Moudy, 1.
Laramie Cretaceous of Wyoming, Williston, 13.
Laramie Plains Red Beds and their age, Knight (W. C.), 6.
Leucite hills of Wyoming, Kemp, 24.
Leucite hills of Wyoming, Kemp and Knight, 1.
Mineral resources of Encampment copper region, Spencer (A. C.), 6.
Morrison formation, Stanton, 8.
New armed dinosaur, Williston, 26.
New form of calcite-sand crystal, Barbour and Fisher, 1.
New locality for Triassic vertebrates in Wyoming, Williston, 28.
New occurrence of sperrylite, Wells and Penfield, 1.
New reptiles from Trias of Wyoming, Williston, 23.
New species of Baëna from Laramie beds, Hay, 2.
Newcastle folio, Darton, 14.
Newcastle oil field, Knight and Slosson, 3.
Note sur les phénomènes volcaniques Tertiaires de la chaine d'Absaroka, Hague, 1.
Occurrence of ichthyosaur-like remains, Merriam (J. C.), 17.
Occurrence of rare metals in Rambler mine, Knight (W. C.), 4.
Petroleum fields of Wyoming, Knight (W. C.), 2, 5.
Platinum in copper ores in Wyoming, Emmons (S. F.), 11.
Platinum in the Rambler mine, Kemp, 20.
Prospecting for oil, Lakes, 36.
Rare metals in ore from Rambler mine, Read, 1.

Wyoming—Continued.
- Report by the State geologist, Beeler, 2.
- Rocky Mountain coal fields, Storrs (L. S.), 1.
- South Pass gold district, Fremont County, Beeler, 1.
- Starfish from Cretaceous of Wyoming, Weller, 8.
- Status of Mesozoic floras, Ward, 5.
- Stratigraphy of the Black Hills, Darton, 2.
- Sundance folio, Darton, 26.
- Sweetwater mining district, Knight (W. C.), 3.
- Teredo-like shell from Laramie group, Whitfield, 4.
- Titaniferous magnetite in Wyoming, Kemp, 36.
- Triassic and Jurassic strata of the Black Hills, Hovey (E. O.), 13.

Miscellaneous.
- Advantages of combining topographical with geological surveying in unexplored regions, Bell (R.), 9.
- American Association for Advancement of Science, summer meeting, Hovey, 46.
- American Paleontological Society, Section A, Vertebrata, Hay, 18.
- Autophytography, White (C. H.), 2.
- Cement resources of northeast Mississippi, Crider, 1.
- Comparison of features of the earth and moon, Shaler, 2.
- Construction of geophysical laboratory, Becker, 2.
- Correction, Van Hise, 16.
- Crystal drawing, Penfield, 7.
- Deep borings in United States, Darton, 25.
- Desarrollo de la geología en México, Aguilera, 5.
- Division of applied geology, U. S. National Museum, Merrill (G. P.), 16.
- Elements of geology, Le Conte, 4.
- Evolution of climates, Manson, 1, 3.
- Evolution of climates, Winchell (N. H.), 19.
- Field work in Wisconsin lead and zinc district, Grant (U. S.), 8.
- Field work of a physiography class, Low, 5.
- Geological bookkeeping, Kemp, 30.
- Geological mine maps and sections, Brunton, 1.
- Geological Society of America, Hovey (E. O.), 25, 38, 40, 41.
- Geological Survey of Canada as an educational institution, Walker (T. L.), 1.

Miscellaneous—Continued.
- Geology under the new hypothesis of earth origin, Fairchild, 6.
- Geology under the planetesimal hypothesis of earth origin, Fairchild, 7.
- Instituto Geologico de México, Guild, 2.
- Machine-made line drawings for the illustration of scientific papers, Daly, 14.
- Magnetic phenomena around deep borings, Lane, 33.
- Meeting of Section A of the American paleontological society, Hay, 20.
- Meeting of Section E of American Association for the Advancement of Science, Hovey, 37, 39.
- Method of facilitating photography of fossils, Van Ingen, 5.
- Microscopic-petrographical methods, Wright (F. E.), 2.
- Nansen's bathymetrical features of the north polar sea, Spencer (J. W.), 16.
- Nebular and planetesimal theories of the earth's origin, Upham, 29.
- The new geology and vein formation, Edwards (W. F.), 1.
- New Palæotrochis locality, Cobb, 3.
- Ore deposits and industrial supremacy, Stewart (J. L.), 1.
- Organic remains in ore deposits, Lakes, 101.
- Paleochemistry of the ocean in relation to animal and vegetable protoplasm, Macallum, 1.
- Physiography in the university, Marbut, 5.
- Problems of geology, Van Hise, 15.
- Problems of geophysics, Becker, 4.
- Prof. James Hall and the Troost manuscript, Clarke (J. M.), 24.
- Relation of geology to the mining industry, Lawson (A. C.), 12.
- Relations of the earth sciences in view of their progress in the nineteenth century, Davis (W. M.), 53.
- Report of the Director of the United States Geological Survey, Walcott, 3, 7, 10, 11, 13.
- Report on geophysics, Van Hise, 13.
- Scope of applied geology, Johnson (D. W.), 10.
- Scope of geological teaching, Rice, 2.
- State geological survey for Colorado, Finch (J. W.), 2.
- Study of stratigraphy, Parks, 7.
- System of keeping the records of a State geological survey, Buckley, 6.
- Training of engineers in economic geology, Branner, 9.
- University training of engineers in economic geology, Irving, 8.
- Where did life begin?, Winchell (N. H.) 20.

CLASSIFICATION OF THE PUBLICATIONS OF THE UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 301.]

The serial publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of the United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists can be had on application.

Most of the above publications can be obtained or consulted in the following ways:

1. A limited number are delivered to the Director of the Survey, from whom they can be obtained, free of charge (except classes 2, 7, and 8), on application.

2. A certain number are delivered to Senators and Representatives in Congress for distribution.

3. Other copies are deposited with the Superintendent of Documents, Washington, D. C., from whom they can be had at practically cost.

4. Copies of all Government publications are furnished to the principal public libraries in the large cities thruout the United States, where they can be consulted by those interested.

The Professional Papers, Bulletins, and Water-Supply Papers treat of a variety of subjects, and the total number issued is large. They have therefore been classified into the following series: A, Economic geology; B, Descriptive geology; C, Systematic geology and paleontology; D, Petrography and mineralogy; E, Chemistry and physics; F, Geography; G, Miscellaneous; H, Forestry; I, Irrigation; J, Water storage; K, Pumping water; L, Quality of water; M, General hydrographic investigations; N, Water power; O, Underground waters; P, Hydrographic progress reports. This bulletin is the thirtieth in Series G, the complete list of which follows (all are bulletins thus far):

BULLETINS, SERIES G, MISCELLANEOUS.

2. Gold and silver conversion tables, giving the coining values of troy ounces of fine metal, etc., computed by Albert Williams, jr. 1883. 8 pp.
7. Mapoteca geologica Americana: A catalogue of geological maps of America (North and South), 1752-1881, in geographic and chronologic order, by Jules Marcou and John Belknap Marcou. 1884. 184 pp.
25. The present technical condition of the steel industry of the United States, by Phineas Barnes. 1885. 85 pp.
26. Copper smelting, by Henry M. Howe. 1885. 107 pp.
44. Bibliography of North American geology for 1886, by Nelson Horatio Darton. 1887. 35 pp.
75. Record of North American geology for 1887-1889, inclusive, by Nelson Horatio Darton. 1891. 173 pp.
91. Record of North American geology for 1890, by Nelson Horatio Darton. 1891. 88 pp.
99. Record of North American geology for 1891, by Nelson Horatio Darton. 1892. 73 pp.
100. Bibliography and index of the publications of the U. S. Geological Survey, 1879-1892, by Philip Creveling Warman. 1893. 495 pp.
127. Catalogue and index of contributions to North American geology, 1732-1891, by Nelson Horatio Darton. 1896. 1,045 pp.
130. Bibliography and index of North American geology, paleontology, petrology, and mineralogy for 1892 and 1893, by Fred Boughton Weeks. 1896. 210 pp.

131. Report of progress of the division of hydrography for the calendar years 1893 and 1 Frederick Haynes Newell. 1895. 126 pp.

135. Bibliography and index of North American geology, paleontology, petrology, and mine for the year 1894, by Fred Boughton Weeks. 1896. 141 pp.

140. Report of progress of the division of hydrography for the calendar year 1895, by Fre Haynes Newell. 1896. 356 pp.

146. Bibliography and index of North American geology, paleontology, petrology, and mine for the year 1895, by Fred Boughton Weeks. 1896. 130 pp.

149. Bibliography and index of North American geology, paleontology, petrology, and mine for the year 1896, by Fred Boughton Weeks. 1897. 152 pp.

156. Bibliography and index of North American geology, paleontology, petrology, and mine for the year 1897, by Fred Boughton Weeks. 1898. 130 pp.

162. Bibliography and index of North American geology, paleontology, petrology, and mine for the year 1898, by Fred Boughton Weeks. 1899. 163 pp.

172. Bibliography and index of North American geology, paleontology, petrology, and mine for the year 1899, by Fred Boughton Weeks. 1900. 141 pp.

177. Catalogue and index of the publications of the United States Geological Survey, 1880-1 Philip Creveling Warman. 1901. 858 pp.

188. Bibliography of North American geology, paleontology, petrology, and mineralogy for th 1892-1900, inclusive, by Fred Boughton Weeks. 1902. 717 pp.

189. Index to North American geology, paleontology, petrology, and mineralogy for the yea 1900, inclusive, by Fred Boughton Weeks. 1902. 337 pp.

203. Bibliography and index of North American geology, paleontology, petrology, and mine for the year 1901, by Fred Boughton Weeks. 1902. 144 pp.

215. Catalogue and index of the publications of the United States Geological Survey, 1901 to 1 Philip Creveling Warman. 1903. 234 pp.

221. Bibliography and index of North American geology, paleontology, petrology, and mine for the year 1902, by Fred Boughton Weeks. 1903. 200 pp.

222. Catalogue and index of the publications of the Hayden, King, Powell, and Wheeler s L. F. Schmeckebier. 1904. 208 pp.

227. The United States Geological Survey, its origin, development, organization, and opera 205 pp.

240. Bibliography and index of North American geology, paleontology, petrology, and mi for the year 1903, by Fred Boughton Weeks. 1904. 243 pp.

271. Bibliography and index of North American geology, paleontology, petrology, and m for the year 1904, by Fred Boughton Weeks. 1905. 218 pp.

301. Bibliography and index of North American geology, paleontology, petrology, and m for the years 1901-1905, inclusive, by Fred Boughton Weeks. 1906. 770 pp.

Correspondence should be addrest to

THE DIRECTOR,
UNITED STATES GEOLOGICAL SURV
WASHINGTON,

OCTOBER, 1906.

Stanford University Libraries
3 6105 019 804 488